REPORT RESUMES

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NINE PROPOSALS FOR ELMENTARY TEACHER EDUCATION, A DESCRIPTION OF PLANS TO DESIGN EXEMPLARY TRAINING PROGRAMS.

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THIS PUBLICATION SUMMARIZES 9 PROPOSED DESIGNS, SCREENED FROM 80 SUBMITTED, FOR MODEL ELEMENTARY TEACHER EDUCATION PROGRAMS. A GENERAL INTRODUCTION DESCRIBES THE PURPOSES AND BACKGROUND OF THE 2-PHASE PROJECT DESIGNED TO IMPROVE THE EDUCATION OF ELEMENTARY SCHOOL TEACHERS IN LIGHT OF THE BEST THINKING AND RESEARCH NOW AVAILABLE. GENERAL DIMENSIONS, RATIONALE, AND OPERATION OF PHASE 1--THE PLANNING PHASE FROM OCTOBER 1967 TO OCTOBER 1968--ARE PRESENTED FOR THE INFORMATION OF THOSE WHO MAY WISH TO SUBMIT PHASE 2 PROPOSALS, DUE FEBRUARY 28, 1969, FOR IMPLEMENTATION OF TEACHER EDUCATION PROGRAMS BASED ON THESE 9 MODELS OR SIMILAR ONES. A CHAPTER IS DEVOTED TO EACH OF THE 9 PROPOSALS DEVELOPED BY FLORIDA STATE UNIVERSITY, UNIVERSITY OF GEORGIA, UNIVERSITY OF MASSACHUSETTS, MICHIGAN STATE UNIVERSITY, NORTHWEST REGIONAL EDUCATIONAL LABORATORY, OHIO CONSORTIUM AT THE UNIVERSITY OF TOLEDO, UNIVERSITY OF PITTSBURGH, SYRACUSE UNIVERSITY, AND COLUMBIA UNIVERSITY TEACHERS COLLEGE. SUMMARIES OF EACH PROPOSAL INCLUDE SUCH TOPICS AS RATIONALE AND TENETS OF THE MODELS, ORGANIZATIONAL STRUCTURES, STAFF RETRAINING AND UTILIZATION PATTERNS, INSTRUCTIONAL SYSTEMS, AND EVALUATION AND FEEDBACK TECHNIQUES. DETAILED ALSO ARE SUCH PROPOSED INNOVATIONS AS BEHAVIORALLY STATED GOALS, INDIVIDUALIZED COMPUTER-MANAGED INSTRUCTION, AND INTERACTION ANALYSIS. (JS)

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NINE PROPOSALS FOR ELEMENTARY TEACHER EDUCATION: A DESCRIPTION OF PLANS TO DESIGN EXEMPLARY TRAINING PROGRAMS

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NINE PROPOSALS FOR ELEMENTARY TEACHER EDUCATION: A DESCRIPTION OF PLANS TO DESIGN EXEMPLARY TRAINING PROGRAMS

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CHAPTER I: INTRODUCTION

Purposes:

The purpose of this publication is to summarize the nine proposals for the design of model elementary teacher education programs that were funded by the Elementary and Secondary Research Division, Office of Education. Eighty proposals were received in response to a Request for Proposals. These were independently reviewed and evaluated by both Office of Education professional staff and consultant readers. The nine proposals summarized in Chapters 2 - 10 are those that survived the double screening and were funded.

These nine proposals represent the first phase of a program designed to bring about the application of the best thinking and research now available for the purpose of producing significant improvements in the education of elementary school teachers. Phase I, represented by these nine proposals, is intended to produce the plans and specifications for nine programs. Phase II will use these specifications, among others, in actually developing and implementing exemplary or "showcase" education programs.

Phase I final reports are due October 31, 1968. Proposals for Phase II are due on or before the end of February 1969. The present publication is intended to increase the lead time of three months for those not now engaged in developing a current elementary teacher education model.

Background:

In the past decade systematic study of, and planning for, improvements in teacher education has been accelerated by several Foundations, the federal government, some state universities, and certain professional organizations such as the AACTE, TEPS, ASCD, AERA, and others. Most of innovations that are frequently mentioned in the nine proposals summarized in Chapters 2 - 10 were developed as a direct product of this ferment: emphasis on performance and competence as opposed to credit accumulation criteria; programmed instruction; behaviorally stated goals; performance testing; individualized instruction including IPI (Individual Prescribed Instruction), CMI (Computer Managed Instruction), CAI (Computer Assisted Instruction); R and I (Research and Instruction) units, and management systems; team teaching, sensitivity training, micro-teaching, flexible scheduling, interaction analysis; gaming and simulation, clinical professor, clinical work, internship, residency, on-the-job training, etc. Empirical data suggest that each of the activities indicated has had something to add toward the improvement of teacher training within the research situation, where all other things are equal. Unfortunately, in reality all other things are not quite equal, in the practical situation the task is not to test a single innovation, but to develop a new and significantly improved means for educating elementary teachers using all of the relevant innovations one has on hand or can invent.

In the strategy for development, it is well known that an invention cannot be made until the last discovery needed for that invention has been made. A few years ago it would have been futile to attempt to design a totally new teacher education program, because too few of the necessary underlying developments had been made. In such a case one patches up what one has--an improvement is made here and there on an ad hoc basis, but no truly significant change is possible. Sometimes performance characteristics of the system may be slightly improved by such patch work. Thus in an automobile one can repair an old car, or build a new one following old specifications. Here and there a change can be made, say by substituting an alternator for a generator, a higher compression ratio, etc. Performance by a variety of criteria--speed, mileage, operating cost, . . . --may be slightly improved. Performance characteristics of already built vehicles, can be altered slightly by such changes, often at extraordinary cost. In most cases performance characteristics are rapidly limited by the constraints of the components and configuration of the design. If one wants a vehicle with performance characteristics that differ markedly or by several orders of magnitude, rather than a few percent, a radical redesign is called for. A basic fact of development technology is that such a radical redesign is not possible until all the essential underlying knowledges and components have been developed. Before all the discoveries are made attempts at such redesign are justified by the fact that they may point to the areas that need further study. However, the design of a system that actually works must wait until the last essential discovery has been made.

During the past few years it has become increasingly evident that the performance characteristics of current teacher education was limited by its inherent constraints of its components and their configuration in the design. This concept is analogous to that of critical mass in atomistics. Or, in the automobile, one can make an improvement here and there by introducing one or more of the recent developments--team teaching, package instructional materials, etc.--into the present system. But limits are clearly set by the existing figuration or system and one is not likely to get more than a few percentage points payoff. To alter the performance capability markedly one must design a totally new system.

The present series of projects, represented by the nine proposals herein reviewed, was initiated by the Elementary and Secondary Research Branch of USOE under the conviction that substantial improvement in the performance characteristics of teacher education could not be achieved on a piecemeal basis. Products of teacher education study during the past decade suggested that the time was ready for designing entirely new teacher education programs having markedly improved performance characteristics.

On October 16, 1967, Request for Proposal No. OE-68-4 was sent to institutions that had requested them. The RFP called for a variety of detailed educational specifications that could be used as guides for developing new teacher education programs that would encompass all aspects of elementary teacher training--administration, instruction, materials, equipment, staffing, retraining of present staff, etc. The first phase of this work dealt with planning. A second phase to be initiated after completion of the first phase on October 31, 1968, will deal with implementation. Proposals for the second phase will be received on or before February 28, 1969. Letters of intent from the presidents of institutions that expect to submit proposals are being solicited by the Elementary and Secondary Education Research Branch.

General Dimensions of Phase I Development Components:

1. Provision for retraining existing facutly to meet the needs of the

curriculum and a staffing pattern sufficiently varied to insure capability of carrying out plans.

2. Evidence of a total commitment to a new program to the exclusion of all other programs of elementary teacher education.

3. Provision for training of preschool teachers (at age levels below kindergarten).

4. Provision for inservice (on-the-job) training of teachers (both those graduating from the new program, and those now in service).

5. Provision for training of supervisors of student teaching experiences.

6. Teacher-training-program goals expressed in terms of observable (measurable) teacher behaviors. A rationale for each behavior showing its necessity and congruence with other behavior.

7. Selection and allocation practices.

8. Professional (College/Department of Education) learning experiences and content includes (a) theory; (b) subject matter related to the elementary school curriculum; (c) approaches to instruction and specific teaching methods, techniques, and tools; (d) preclassroom clinical experiences (simulation, role playing, . . .); (e) student teaching. Teaching methods including strategies and tools, or methods of individualizing instruction to be used by the college faculty in developing the various teacher knowledge and behavior competences.

9. Relationship of professional sequence (not necessarily courses) to the entire undergraduate program. When would an activity be introduced? What percent of the curriculum would it comprise? What nonprofessional (outside of Education) would be required or recommended?

10. Evaluation and feedback techniques to be used during, and at the end of, the program to assess student acquisition of essential teaching behaviors and knowledge. Follow-up studies of graduates. Plan for continuing systematic assessment, revision and updating program.

11. Multipurpose management and evaluation system including data storage and rapid retrieval capabilities to permit continuing diagnosis of student progress and relevant restructuring of trainee's learning experiences. Provision for administration of development of each component and the total program to insure smooth operation.

12. Cumulative aspects of the program. Do the parts fit together to produce a cumulative result that is greater than a simple sum of the parts.

13. Differentiated staffing.

14. Certification and relationship to other institutions and agencies relative to content, teaching behaviors, cooperative relationship.

To assist Phase I proposal writers, a summary of research in teacher education supported by the Bureau of Research, USOE, was prepared, and sent to all persons requesting it. There were 146 projects listed--under the heading "teacher education" were 93, "student teaching and student teacher" 15, inservice teacher education 30, and preservice education 8. This is not an exhaustive coverage of the work supported by USOE. A great deal of the production was reported in journal articles and bulletins.

Rationale and Operation:

[redacted] The program was designed to develop complete and comprehensive instructional programs for educating elementary school teachers. These programs include preparation of preschool and elementary teachers and cover preservice and inservice components.

Any agency or institution having educational research and development capabilities was eligible to submit a proposal. Requests were mailed to nearly all institutions having elementary teacher training programs, to research and development centers, and Regional Educational Laboratories, state departments of education, some local school systems, and professional organizations.

Deadlines for submission of proposals for development of educational specifications for exemplary elementary teacher training programs was January 1, 1968. Eighty proposals were received. Proposals were reviewed by several contract specialists within the Division of Elementary and Secondary Education Research, the Division of Elementary and Secondary Education, and the Division of Higher Education. Proposals were also reviewed by an ad hoc advisory panel of field readers who ranked the proposals on their technical merits. Out of these data and the ensuing dialog between the OE staff and the advisory panel, nine proposals were selected for funding. Contracts for the development of educational specifications were awarded on March 1, 1968. Final reports are due on

October 31, 1968. Final reports of the first phase are to be used as a basis for issuing a second request for proposals (Phase II) for development and implementation of complete educational systems for elementary school teacher education. Those who submit second phase proposals may use the models developed in the first phase as a basis for their program proposals. Second phase proposals will be due on February 28, 1969. It is anticipated that proposals can be funded over a five-year period to permit development of showcase institutions. Funds will be made available for extraordinary expenses; normal operating expenses are the responsibility of the local institution. A total commitment of the new plan is required.

Chapters 2 to 10 contain a detailed summary of each of the nine proposals. Each summary was prepared by means of a paragraph-by-paragraph analysis of the original proposal. The summary was intended to include all relevant details of the proposal. This should not be interpreted to imply that the final report will necessarily be the same. In fact field visits suggest that substantial changes were being made in some instances. The present summary is designed to reflect only the contents of the proposals. It probably reflects the perceptions of the state of the art at the time that the proposals were prepared.

CHAPTER 2: A MODEL FOR THE PREPARATION OF ELEMENTARY TEACHERS

Florida State University

Abstract:

The proposed model training program is based upon the premise that the best way to prepare elementary teachers is to identify the teacher behaviors expected, segment these behaviors into observable and measurable subobjectives and systematically set about the task of developing in the trainees these expected behaviors. In this regard, nine broad desired behaviors are presented along with their rationale.

Design for the development of these behaviors includes general education, area specialization, pre-professional content and professional education. It will consist of three phases: underclass, pre-service, and on-the-job (in-service) training.

The underclass phase encompasses the freshman and sophomore years. It will be devoted to: (1) providing general education (2) providing an understanding of teaching as a profession, and (3) providing the background in disciplines relevant to teaching. In addition, some school related experiences will be provided in the first two years as one of six pre-admission screening procedures for candidates to the professional school.

Content of the pre-service phase of the program is to be determined by analyzing the terminal behaviors into component behaviors and organizing these into a hierarchical system. Studies of classroom teaching will be drawn upon to provide a conceptual framework in terms which teaching behaviors will be analyzed. The parent disciplines of learning theory, child development, and social psychology will be utilized in determining what sorts of component behaviors are desirable.

The pre-service phase will rely heavily upon video tape, audio tape, micro-teaching, simulation and practice teaching as techniques to bridge the gap between theory and practice. The organizational structure will permit the trainee to progress through the program at his own rate. When he has mastered one component behavior, he will move on to the next. Thus, there will be considerable use of programmed learning and small group instruction.

The model will emphasize the continuing aspect of the teacher's training in the on-the-job (in-service) phase. This phase will have two foci: (1) systematic study of the theoretical background of professional education--including learning theory, philosophy of education, history of education, developmental psychology and social psychology; (2) supplying materials and services to teachers, schools and school systems so that teachers will become more effective at solving their own on-the-job problems.

There will be both formative and summative evaluation of the program, but primary emphasis will be given the former. Emphasis will be given to evaluation designed to provide project personnel with effective information for continuously reshaping their portion of the total program. Actual design of the evaluation will begin with the behavioral objectives incorporated in the program. Some objectives will require only paper and pencil tests; other objectives will require systematic observational techniques. As the terminal objective of the program is approached, expected behavior outcomes will become more complex, necessitating more comprehensive evaluation instruments.

Finally, the proposed model gives particular attention to programs for the professional development of elementary teacher education faculties and the professional staffs of local educational agencies who will have both direct and indirect involvement in the training program.

The Setting:

It is toward the development of a comprehensive construct that the seven program components and supporting procedures of this proposed model are designed: (1) sets forth in behavioral terms the goals of the model program. A brief rationale is given for each desired behavior; (2) describes the plan and the criteria to be used in selecting candidates for the program, the rationale for the recommended criteria and a description of the procedures for further developing the specifications for selection, admission, and post-admission screening of trainees; (3) presents the general framework of the program with particular reference to the relationship of the professional sequence to general education, area specialization, pre-professional content and student teaching. In this component an approximation is given of the proportion of the trainee's time that will be devoted to the various elements (general education, professional education, area specialization) of the total program; (4) indicates a general description of the learning experiences and content in the professional aspects of the program, the beginnings of an effort to cluster the professional content around teaching behaviors, and an illustration of how such content will be organized and taught with reference to behavioral objectives; (5) provides some analysis of the conditions that need to be planned for if on-the-job (in-service) programs are to be effective. Then a broad outline of an in-service program is presented; (6) describes the evaluation and feedback techniques to be used, the design for evaluating the on-the-job (in-service) program, the data storage and information retrieval capabilities and the design for continually and systematically up-dating the teacher education program based upon the identification, implementation and testing of new procedures and hypotheses. Attention is given to what needs to be done in order for an institution to be able to implement a program of evaluation based on behavioral objectives; (7) analyzes faculty requirements, presents possible staff utilization patterns, proposes an administrative organization that will facilitate the implementation of the program and suggests the kinds of professional development (in-service education) activities for university and public school faculties that are dictated by the unique elements of the program.

Rationale and Tenets of the Proposed Model:

The rationale is based upon findings of relevant research and certain basic convictions and assumptions held by personnel of the several schools, colleges, and departments of the university that are responsible for the preparation of elementary teachers.

The following major tenets of this rationale and the unique features that each implies for the model may be useful in interpreting the seven program components:

1. Only persons with demonstrated ability and interest should be admitted to the program. The model proposes to use the student's first two college years to better prepare him to make an intelligent decision about requesting admission to the teacher education program. It also imposes responsibilities upon the institution involving systematic data collection, analysis and decision making related to the applicant's admission to, or rejection from, the professional sequence.

2. The program is based on the assumption that the content of

teacher education, to a considerable extent is yet to be developed anywhere in the United States.

Toward the end of going beyond existing horizons this model suggests the elimination of professional education courses in the usual sense at the pre-service level. Professional concepts and skills will be characterized as a cluster of desired behaviors. Evaluation techniques will be employed as an integral part of the monitoring of performance levels related to each desired behavior.

Furthermore, the amount of time to be spent by trainees on the various professional education components will be flexible. When a trainee can demonstrate that he understands and can perform at an acceptable predetermined level on any single behavioral objective or a cluster of the behavioral objectives, he will move on to another. Recognizing that different teaching situations may require different kinds of behavior, the understanding and performance of the student will be tested in several diverse situations.

3. The professional components of the new program should consist of conceptualizing, analyzing and experiencing teaching. Study about teaching, about learning, and about child growth and development cannot, in itself, be expected to produce desirable teacher behaviors.

The proposed model will attempt to eliminate the dichotomy between laboratory experience and abstract experience. The full range of experiences--from the most abstract to the most concrete--shall be brought to bear on each concept and skill. This can be done through simulated experiences, micro-teaching, self criticism (by using precise objective criteria developed for the program) and a variety of other procedures and techniques.

4. No one type of teacher behavior or a behavior pattern is best for all children in all situations. The model will support the development of a variety of teaching strategies and styles, and it will require that the student teacher demonstrate his ability to pick and choose from these to accomplish the desired learning outcomes in children.

5. Some teaching concepts and skills are specific for teaching of only one kind of content, while others are appropriate for a wide variety of content areas in the elementary curriculum. The proposed model will require that the acquisition of content be stated in behavioral terms. This suggests that the behavioral objectives unique to a content area and those common to several areas can be identified and organized into a hierarchical system.

6. The goal of the pre-service program should be to prepare teachers to begin normal responsibilities in a school situation. This means that the trainee will not have reached full maturity upon completion of the pre-service program. Some concepts will later broaden and deepen, and experiences in additional types of situations will further refine and mature his skill.

7. The implementation of the proposed program will require faculty members at the teacher training institution to gain new understandings and skills for working with other professionals and students. As the program is planned and implemented, and as the feedback on its implementation is assessed, each participating faculty member should have the maximum opportunity to learn from his colleagues without embarassment. Simple as it may appear, the proposed model suggests that the best way to rejuvenate teacher trainers is to immerse them in the development of the educational specifications represented in the training program. Thus, teacher trainers who must be expected to develop the evaluative criteria related to an educational objective, or a cluster of objectives, can only do this effectively through experiencing and mastering the representative behavior.

8. A program for the preparation of elementary teachers such as that visualized in this proposal requires resources in addition to those found in the university setting. Planning and implementation of educational specifications must represent a cooperative venture among university personnel, teachers, administrators and the personnel from all other supporting agencies who have a stake in determining what elementary teachers should be able to accomplish.

The model uniquely suggests a more specifically structured cooperative arrangement between university and school personnel, particularly as related to laboratory-type experiences.

Furthermore, the writing team has rigorously avoided including in the model a number of critical considerations that appear to us as more proper aspects for the educational specifications development stage. The tendency to slip into discussions of organization, "How much of what," a description of the specifics of study in depth, and program scope and sequence has been resisted. "The task, as we see it, is to describe systematic procedures (models) for arriving at specific teacher behaviors and to give appropriate attention to those forces which will impinge upon the development of these behaviors."

PROGRAM COMPONENTS

I. Expected Teacher Behaviors

Program goals are stated in terms of teacher behaviors. Behaviors are observable, and thus help to link the program abstractions to the reality of concrete actions. Behaviors can be evaluated, and the evaluations used both to chart positive progress and also to indicate the direction toward which remediation should proceed. This evaluation can be applied as a measure of individual progress and also of the progress of the program or a particular part of it.

The term "teacher behavior" is used to describe and classify the functions which the teacher performs. The system to be developed makes allowance for this open-ended usage. The model recognizes several types of teacher functions. One type related to planning of outcomes, another to planning and implementation of strategies, another to feedback analysis or evaluation, and another to maintenance of appropriate learning behavior through reinforcement.

Teacher behaviors (activities) go beyond teacher competencies (capabilities) in that they imply evidence of the use of competencies. Goals are stated at this time as broad descriptions of teacher behaviors. Stating the goals in broad terms at this time is inappropriate for developing the general framework for the proposed model and for indicating what yet needs to be done before the model can be implemented. It is recognized that the behaviors will need to be stated in more specific terms for different clusters and hierarchies of professional experiences. Gagne and others (see Component 4) have developed procedures which promise to make these behaviors more susceptible to the kinds of evaluative procedures that approach an objectivity and precision not heretofore possible. No attempt has been made at this point to follow a logical order or to develop a hierarchy of experiences. Bloom's Taxonomy of Educational Objectives will be utilized later as specifications for implementation are developed. Furthermore, it is not unlikely that additional teacher behaviors of this broad, general character will be identified at the time specifications are drawn and that some of those already identified may be combined at that step. Ten major teacher behaviors which would appear to constitute a working list are:

1. The teacher will devise objectives in terms of behaviors which are understood and accepted by the learners.

2. The teacher will integrate the program and materials of instruction by interpreting both individual needs of the pupils and the total learning situation that exists. The reservoir of knowledge available to the

teacher and its bounds are determined only by what the teacher knows and is able to use. Packages of materials and methods have been developed by experts in the various subject fields. These are now available in full-blown form for use by elementary school teachers. However, few teachers can use them because the orientation of an average teacher (his experiential background, his personality and the elements of his teaching environment) seldom matches that of the developers of educational packages. He must first be aware that the material is seldom usable in its original form and second be able to adapt it successfully. The teacher is still a curriculum builder in the full sense in that he must find, assemble, and organize the major materials of instruction to be used, but the teacher in 1968 has more decisions to make in the interpretation of the programs and materials than did the teacher two decades ago.

3. The teacher will plan and employ appropriate teaching strategies for the attainment of objectives. Varying strategies are needed for the attainment of varying objectives. Strategy may be regarded as the technique for solving certain teaching problems. At one level the teacher must develop a perspective on the problem to be solved by a teaching behavior. At another level the strategy planner devises procedures and organizes materials from the standpoint of this perspective. The teacher then through empirical testing, finds out whether his strategy is useful to his goal and whether it is also useful in taking him beyond his goal to new goals. The apprentice teacher must do more than learn the concepts and skills of how to present a discipline. He must learn when and in what manner these concepts and skills may be useful for teaching an individual pupil.

4. The teacher will evaluate learning outcomes in terms of human behavior.

5. The teacher will manipulate and control the classroom environment so that most effective learning can take place. A most important factor in the classroom environment is the teacher. Perhaps the most important element in the influence of the teacher on that environment is the extent to which the teacher is in control of her own behavior. The teacher in training needs to learn to be able to hold her own social behavior at arm's length and examine it as it has a bearing on the classroom environment. The factors that the teacher manipulates are his own behaviors, the classroom facilities, the equipment, the materials of instruction, and to some extent, the behavior of the pupils.

An analysis needs to be made of what it means for the teacher to be able to give her attention contingently for effective learning to take place. This is the maintenance function of teaching.

6. The teacher will use technology appropriately in attaining stated objectives. He should understand the limitations and capabilities of materials and equipment as they relate to the teaching-learning process.

7. The teacher will draw upon a breadth of knowledge and a depth of understanding about society and human behavior, as well as about content fields.

8. The teacher will provide leadership in the school building and/or school district as an agent of change. Inherent in this is the realization that graduates should be armed to resist the erosion of professional idealism which sometimes comes when beginning teachers are confronted with the real life school situation and colleagues who are committed to maintaining the status quo. Teachers must continue to grow and change.

9. The teacher will share with colleagues in planning and directing the learning experiences of a group of children. Elementary school teachers of today, to say nothing of 1978, cannot reasonably be expected to be well informed in all areas of the elementary school curriculum. The model proposes that each teacher have some depth beyond general education in an area of study on which the curriculum for the elementary schools draws.

10. The teacher will demonstrate an understanding of learning principles and their application to teaching situations. Talking about the use and evaluation of learning principles has been the rule; involvement in them has been the exception. The implications of research on the learning process must be made explicit by providing experiences in all phases of selecting materials, planning strategies, stating objectives, controlling classroom environments, evaluating learning, and dealing with extra class and extra school forces that influence pupil learning.

II: Screening and Selecting Teacher Trainees

Pre-admission Screening and Selecting:

Two dimensions of admission screening and selection are proposed. One will be beamed toward helping the student make a wise career choice prior to requesting admission to the professional school and the other will define the parameters whereby the professional school accepts, puts on probation, or rejects the candidate. Factors and activities that should contribute to a potential candidate's choice will also be sources of basic data upon which the college will make its decision.

Initial screening activities will be accomplished throughout the candidate's first two years and prior to making application to the professional school. The screening activity will be designed to include data collection and evaluation of evidence that the candidate has:

1. met existing academic requirements.

2. participated in a teaching situation for a given number of clock hours. This participation might include such activities as organized tutorial service, teacher aid, certified volunteer classroom work and paid instructional services. These activities will be in accordance with objective criterion design and systematic behavior evaluation.

3. achieved minimal academic skills in broad areas (i.e., reading proficiency, oral communication, etc.) and skills in specific areas appropriate to developed criteria.

4. had certain organized introductory teacher education experiences designed to introduce broad concepts of the teaching profession.

5. undergone some personality evaluation to include observation by competent professionals during the assessment process.

6. met minimal health standards and is free of physical disabilities that would preclude his effective operation in a teaching career.

Post Admission Screening:

Screening will continue throughout the professional school program. It will be carried on primarily through monitoring the acquisition of educational objectives and student counseling, and it will emphasize systematic assessment and personal progress evaluation. This screening will be done through a variety of methods (i.e., video tapes, tape recorders, trained observers, micro-teaching). Insofar as possible screening will be based upon objectively validated criteria which now exist or can be developed.

The departmental program will be organized to facilitate branching the student into and out of developmental and/or remedial activities as he moves through laboratory experiences, professional sequence activities, specialization study and student teaching responsibilities.

The Development of Specifications:

Specifications will have to include a careful selection of instruments for measuring aptitude, achievement and personality traits. Further refinements will need to be made in the procedures to be followed in providing counseling experiences for prospective candidates for admission and for providing some involvement in school situations which will provide a basis for the student to determine whether or not to apply for admission. Plans will be established for collecting a variety of data to be used in the screening process and for developing procedures for evaluating these data to decide whether to admit candidates.

III. Overall Outline of the Model Program

As conceived the program relates to the entire gamut of the collegiate experiences provided for the trainee, including general education, content specialization, pre-professional content and professional education. It will be offered at three levels: underclass, pre service and in-service. A two-year program covering the freshman and sophomore college years is called the under-class level. The pre-service program, beginning with the junior year, includes whatever is necessary to establish evidence of satisfactory behaviors in the academic disciplines and the professional program, and concludes with the awarding of a bachelor's degree. The in-service program will be the equivalent of approximately one year of study extended over three to four years of teaching and will conclude with the awarding of a master's degree.

IV. Professional Learning Experiences and Content

Professional learning experiences and content in this proposed model are viewed as essentially the same as the teaching behaviors set as goals. Objectives stated in Component one mark out the behaviors to be developed in each of the important dimensions of teaching. The concepts and skills to be taught the trainees will be those which are necessary components of the behaviors.

The dimensions of in-classroom teaching behavior are probably the ones most crucial to teaching success. They are also the ones most in need of more adequate conceptualization. Schemata will be developed to describe teaching and the functional models and to incorporate conceptions of classroom teaching variables relatively unknown in teacher training programs now in operation.

When the conceptual structure has been developed, experts in the parent disciplines related to each dimension of teaching will be asked to survey their disciplines to determine what behavior constitutes effective performance of the variables in that dimension.

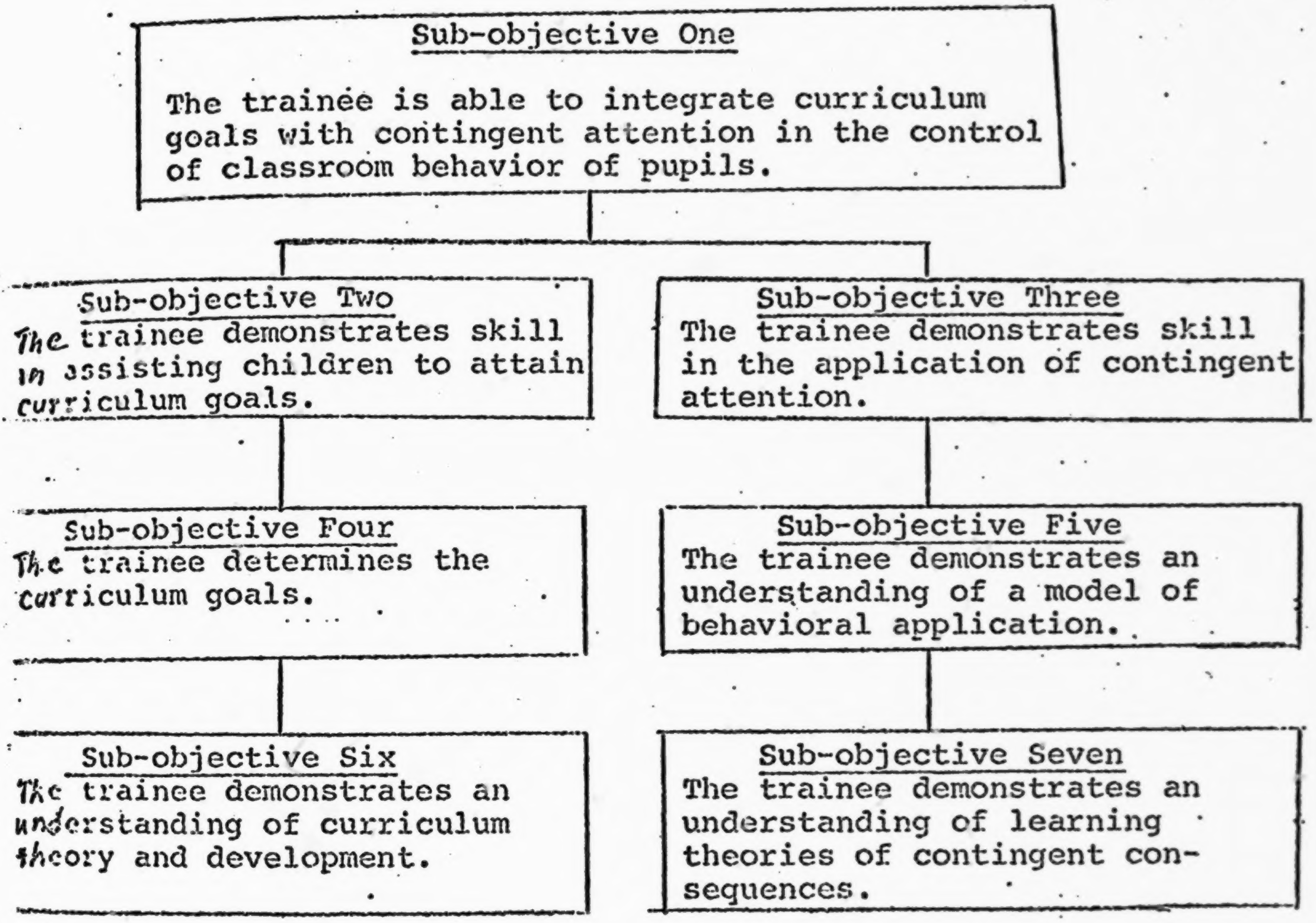
This approach assumes that courses in learning theory, developmental psychology, etc., as presently constituted, have little direct relevance to teaching. It is also assumed that it is unreasonable to expect the teacher to determine by himself how and where knowledge of any parent discipline (learning theory, developmental psychology) is relevant. Relevancy of such knowledge to specific aspects of teaching performance must be clearly established in the teacher training program.

The model for teaching teacher behaviors is based on the assumption that there is a hierarchy of steps in the development of a particular teaching behavior, and perhaps a hierarchy as to which of the teaching behaviors should be taught first and which next until the most complex behaviors are developed.

The procedures derived by Gagne seem to be promising. He proposes a theoretical problem: the trainee knows the learning scores of pupils on a given examination. He is asked to apply two different methods for grading the students. Gagne analyzes this task into its components by asking the question, "What does the trainee need to know in order to perform this task?" This analysis, Gagne says, might lead to subobjectives such as the listing of procedures for deriving grades from criterion-referenced tests. These sub-objectives are, in turn, subjected again to a question, such as, "What does the student need to know?" The process of setting sub-objectives and asking the question, "What does the student need to know?" results in a diagram of the process that Gagne considers a knowledge hierarchy: the terminal behavior is listed at the tip and is connected to the appropriate subordinate behaviors.

As stated earlier, one important objective of the proposed training program is that of having the teacher use his attention contingently to maintain an effective learning environment. The way in which this objective might be broken into a sequence of sub-objectives is set forth below to illustrate the procedure described by Gagne: (Illustration on next page.)

A variety of activities will be engaged in to achieve each subobjective. Some sub-objectives will require reading of appropriate material and discussing it with the professor and other students (subobjectives six and seven); another sub-objective might require learning to use an observation schedule (sub-objective five); and still another sub-objective might require classroom demonstration of skill in achieving certain goals or behaviors (Components two and three).



Sub-objective One

The trainee is able to integrate curriculum goals with contingent attention in the control of classroom behavior of pupils.

Sub-objective Two

The trainee demonstrates skill in assisting children to attain curriculum goals.

Sub-objective Three

The trainee demonstrates skill in the application of contingent attention.

Sub-objective Four

The trainee determines the curriculum goals.

Sub-objective Five

The trainee demonstrates an understanding of a model of behavioral application.

Sub-objective Six

The trainee demonstrates an understanding of curriculum theory and development.

Sub-objective Seven

The trainee demonstrates an understanding of learning theories of contingent consequences.

V. On-the-Job (In-Service) Training

The program for improving teacher behaviors after they have completed the pre-service program and have full teaching responsibilities is regarded as a continuation of the pre-service program. In large measure it has been planned all in one piece with the clear understanding that certain teacher behaviors might be developed more effectively after some full-time teaching experiences. This part of the model is expected to be the equivalent of approximately one year of full-time study.

There are certain initial assumptions upon which the in-service program is based:

1. The responsibility for the in-service program lies with the profession, the schools, the state department of education, and the university. The in-service program implies a cooperative venture between the schools,

the profession, the state department of education, and the university. Recently the schools have taken little responsibility for this activity.

2. A major function of a university in the teacher education program is the provision of in-service education, especially for its graduates and for teachers in its service area. In-service programs should be a regular part of the university program for teachers, and adequate provisions should be made for staffing and funding this activity.

3. Public school systems should routinely provide adequate time with pay for the in-service education of the professional staff. In-service programs should be scheduled at psychologically sound times and intervals to insure maximum teacher attention, interest and motivation.

4. Working on pertinent problems related to improving instruction is an effective way to improve teacher behaviors.

To make in-service program effective, major reorientations of the roles of schools and school systems, junior colleges, and the state department of education, will have to be made. One of the early tasks in developing specifications for the in-service program will be to get some regional (within state) learning centers established with incentives for schools to use them in improving their programs.

VI. Data Storage, Retrieval, and Feedback

Evaluation for this model is conceptualized as being essentially of two types: formative and summative. Formative evaluation comprises those activities which take place during the actual development of materials of instruction. These activities are conducted by an evaluation specialist who is sympathetic with, and a part of, the curriculum development team. His task is to gather both quantitative and qualitative information which is fed back to the writers and developers in order to revise and strengthen the program. Emphasis in formative evaluation in on what the students do not learn as opposed to what they do learn. The "negative" information which is gathered can be utilized to restructure and rework these portions of the curriculum so that the probability of meeting the objectives is increased.

Formative evaluation of a curriculum terminates when the developers are agreed that all feasible improvements have been made and that the objectives have been met successfully by the students going through the program. When a product has been completed, it is available for summative evaluation.

Summative evaluation is that phase of curriculum evaluation in which the finished product is compared with some other product in terms of its effectiveness and efficiency in obtaining the desired objectives.

Considerations in the development of the system for the evaluation of the training program should begin with the establishment of the behavioral objectives for the total program. These behavioral objectives, according to Mager, should consist of three major components: (1) under what conditions the actual behaviors will have to be performed; (2) is a description of the actual behavior that is to be observed; (3) is that of the criteria to which the behavior must be performed. As with all the components of the systems model, these criteria need to be flexible and continuously monitored in terms of their feasibility and acceptability in the total instructional program.

Actual design of the evaluation will begin with behavioral objectives which will be outlined in the educational specifications. The types of evaluation will depend upon the specifics of the behavioral objectives.

The sequencing of the behavioral objectives indicates that as the trainee approaches the terminal objective of the program, more and more of the subordinate objectives become interrelated and the expected behavioral outcomes become more and more complex. Also, the evaluation instruments must become more comprehensive in nature; e.g., the total evaluation of a practice teaching situation may involve many variables such as observer ratings, student performance, teacher's preparation of the instructional materials, feedback of supervisors, and the effective use of media.

It may also be propsed that various media such as video tape and computers be implemented in the total evaluation sequence. These devices provide not only a permanent record of the performance of the student and, therefore, a record which may be scrutinized by a number of investigators, but also a means of self-evaluation by the student. Evaluation of this program should not only provide data to the developers of the program, but also to the students as they progress through it. The use of video tape will provide the beginning teacher with an informative and impersonal view of his own teaching behaviors, and will provide an opportunity for him to criticize his own techniques.

The use of computer assisted instruction will also be both evaluative and diagnostic in nature. For example, under either individualized or classroom type instruction, the computer could be programmed with relevant review and test-like questions with which the student would be required to interact prior to his taking the final evaluation of a particular objective. These materials provide immediate feedback to the student in terms of identification, misconceptions, and inadequacies of knowledge in particular areas. This is possible through the dynamic nature of computer assisted instruction which permits the student to submit his own answer to a question and have it evaluated by the instructional program in the computer. Information provided to the trainee in terms of feedback to him, can be recorded on magnetic tape and can be summarized and presented to the instructor in order to indicate the strengths and weaknesses of particular trainees as well as the group as a whole. Also, the computer can be effectively used for the administration of various paper and pencil type examinations. While feedback to the student will be designed for student interest, much more detailed, statistical information will be given to a responsible faculty member. The faculty member can then use this information to guide the student either in advancement or in remedial activities.

If an individualized approach is adopted for the preparation of elementary teachers, the need for a management device which has a facility for data storage and rapid retrieval of information is required. The proposed program indicates a need for storing pertinent information on every trainee about his background and current status in the university and in the teacher training program. A trainee's status in the program could be clearly indicated by a print-out of the objectives which he has already met, and further indicate additional objectives to be met in order to achieve the final terminal behavior. Information about test performance and personal evaluations might also be stored. These evaluations will be available for advising and assisting students in the preparation of their programs.

In addition to storing information about the trainee, the computer system can also store the detailed specifications of the curriculum program itself. When this is available, the trainee will be able to interact with the computer and determine the various types of behaviors that will be required in order to progress towards a degree. Many of the counseling activities which are quite routine in nature can be readily carried out by interaction between the trainee and the computer. Only those problems which obviously require human interaction and judgment would be referred to faculty members.

Management of small components of instruction can be done through the interaction of the trainee with the computer. For example, for a particular module, some of the instruction might be given directly via the computer, as well as using the computer to direct the trainee to other relevant activities such as watching a film, listening to an audio tape, reading particular textbooks, or referring to particular articles in the library. The use of this approach to instruction would not only provide the trainee with an example of individualized instruction, but would also make necessary the possession of knowledge of the use of other instructional media such as 16 mm projectors, slide projectors and tape recorders.

There must be an extended period of in-service training in order to orient the teaching faculty to the possible usage of the computer system and to obtain their assistance in deriving the specifications for the kind of data which would be stored in the computer. By involving the faculty, one can expect that the output from the system will be utilized more effectively. Instructors must be thoroughly familiar with the total procedure and must be prepared to accept the empirical evidence in the form of the data from the trainees. This data should serve as a guideline for revising any or all of the components in the total program.

VII. College Faculty Requirements, Staff Utilization Pattern And Professional Development (In-Service Training) For College Faculty and Cooperating Public School Teachers

The model program outlined up to this point will require a faculty with a high level of demonstrable and measurable competencies. Inasmuch as the model is based on identifying and measuring the terminal behavior of the teachers in training, it is mandatory that the faculty be able to provide the instruction and guidance to permit the teachers in training, to achieve the terminal behaviors effectively and efficiently.

The program also requires extensive team planning as the continuous adapting and revising of the program is carried on. Once the model program is ready for implementation, it will require the utilization of the staff in a unique way. A large part of the time of the college of education faculty will be spent in prescribing, coordinating and evaluating the experiences of trainees designed to develop behaviors. The number of methods courses will be sharply reduced if not completely discontinued and replaced by a variety of experiences related to classroom teaching. Some of the faculty members will not be "teaching" in the old sense. In these new roles, they will be designing experiences for the trainees and gathering materials for their use in activities such as micro-teaching, simulation, and video taping. They also will be planning classroom participation as well as intensive and extensive student teaching. By planning experiences for the trainees to carry out rather than planning lessons or lectures, the instructor actively demonstrates commitment ot the teacher behaviors which emphasize student rather than teacher involvement in learning activity.

The faculty requirements and utilization pattern emphasize the need for extensive professional development of the college faculty. The faculty concerned with the content courses must realize that certain measurable levels of achievement will be prescribed and that this will necessitate a variety of activities and courses that trainees may use to gain the required level. Thus the faculty members for the new program will have to up-date their technique for diagnosing, counseling and evaluating, as well as develop applicable methods, techniques and tools for use in their classrooms.

An equally important thrust of the in-service program should be directed toward the cooperating public school teacher who will be concerned with the classroom experiences of the trainees. Cooperating teachers will be regarded as university faculty associates with something like joint appointments by the university and by the school system at which their major work is done. Time will be provided for them to work with student teachers and a definite period of training equivalent to at least two full-time summer terms will be given to the cooperating teachers to prepare them for their work with student teachers. This training will not consist of the mechanics of supervising student teachers, but rather of a study of the research that has been done on teaching effectiveness, some of the models that have been developed for teaching, the new materials that have been developed for teaching, the new materials that have been developed by the experts in the academic fields, the new media for teaching including micro-teaching, video tape, etc., and where necessary, additional study in some of the academic subjects.

It should be readily apparent that an extensive amount of time will be required for the professional development (in-service training) of the college faculty and cooperating public school teachers. It is entirely possible that the initial part of the implementation phase of the program will be devoted to "tooling up" for the project and/or to approaches among the social and behavioral sciences, and general experimentation in the individualization of instruction for teachers. Team members would match the problem with necessary new directions, organizations, content, materials, teaching behavior, facility use or location, administration, management, and even financing. The new dimensions of these components become the criteria for a teacher education model which is then designed.

The teacher education model would be tested against the same urban setting and education parameters that influenced its creation. Methods and procedures of testing would be a high priority design team function, After this testing, adaptations of the model would be used to create special programs, seminars, workshops, and in-service programs for teachers, administrators, and teacher educators.

Project Management Control Chart

The control chart, which is a part of the project requirements, is designed to give the project manager instant and comparable information about the progress of each and all components of the project. In addition, it is a basis for management decisions on the allocation of resources. The chart is a composite of the PERT techniques and the Critical Path Method.

CHAPTER 3: THE GEORGIA PLAN FOR DEVELOPING A MODEL SYSTEM OF TEACHER EDUCATION--ELEMENTARY

University of Georgia

I. Introduction

The system for developing specifications described in this proposal employs what might be termed a modified system analysis approach. In general, the network begins with the identification of the rationale which is to be used for the determination of the specific pupil behaviors which teachers are to create in pupils and flows from this to determining the numerous specific behaviors which teachers must have in order to create these changes in pupils. Teacher behaviors in turn are used to determine the specifications for the conditions necessary to create desired changes in the behaviors of undergraduate and in-service teacher education students. Particular attention is given to all aspects of the teacher education program: administration, organization, instruction, materials, equipment, staffing, and facilities, and detailed specifications are stated. Cutting across the entire flow of events is the subsystem of evaluation which is concerned with developing numerous specifications for obtaining, recording, and evaluating of data and the instruments to be used carrying out its function.

A beginning point for improvement of education lies in the role of the teacher. The teacher, whose mammoth influence on student learning cannot be denied, must have a key part in facilitating improvement. The teacher education environment for the prospective or in-service teacher is the most crucial influence on that teacher. What happens to and within the teacher is of utmost importance in transforming the education process from a closed system into a dynamic interactive complex which exists in a healthy steady-state condition.

A Statement of Purpose:

The goal of the Georgia model of teacher education is to produce teachers of optimum effectiveness. Optimum teacher effectiveness, as used throughout the pages of this proposal denotes the execution of instructional performance, derived from the best available practice, and supported by sound research and/or theory. Optimum teacher effectiveness, in the final analysis, will be evaluated in terms of optimum pupil learning.

The behavioral competencies required to make giant strides in optimizing pupil learning have not been well defined or stated. Yet never before has the education had the potential that it has today for defining and stating those competencies. Theories, models, and research findings are now available to become the base for the task at hand. The educational leadership knows more than it has ever known in the area of multi-disciplinary effort. The hardware and software essential for accomplishing the goal is available in ever-increasing quantity and quality.

II. The Products--Specifications

The General Nature of the Products

The system for providing a model educational program for elementary teachers herein described will have four sets of specifications which broadly categorize all aspects of the model program; specifications for: (1) teaching behaviors essential for effective instruction in the elementary school, (2) conditions essential to producing teachers who possess the behaviors required for effective teaching in the elementary school, (3) candidates admissible to the model teacher education program, and (4) systematic evaluation of all aspects of the defined model.

B. Othaniel Smith's concept of teaching as "a system of actions intended to induce learning" (Curriculum Framework for Georgia Schools, p. 9) is useful here because it calls attention to two sets of behaviors in the educative process--that of the teacher, and that of the learner. The two sets of behaviors are necessarily interrelated. The teacher's classroom behaviors should be directly related to the behavioral changes which are deemed desirable for the learners.

Specifications for Desirable Pupil Behaviors:

Information relating to desirable pupil behaviors is available from numerous sources. There are national reports (White House Conference), state guides (Curriculum Framework for Georgia Schools), and various local bulletins. The behaviors identified in sources such as these are described with varying levels of specificity. Some are stated as general aims, others as basic developmental goals, and still others as behavioral outcomes.

At another level of specificity there are statements which describe recommended developmental goals for elementary school children. The Mid-Century Committee Elementary Education identified nine basic areas of elementary school learning (Kearney, 1953). The Committee specified sets of behavioral outcomes for nine areas using four domains of behavior --viz., knowledge and understanding, skill and competence, attitude and interest, and action pattern.

Other sets of behavioral outcomes are specified and organized by subject area elements. Reading is one of the basic phases of the communications area of elementary school learning; it is also a basic requisite for mature development in the other areas of elementary school learning. Observable learner behaviors indicate what elementary school children will be expected to do in relation to comprehension and study skills as they reach a terminal point in their elementary reading instruction.

Other sets of behavior outcomes are specified for the speaking, listening, writing, etc. phases of the communications area of elementary school learning, and for the remaining academic and artistic areas studied in elementary schools. The information will be collected, analyzed and categorized in terms of general aims, basic developmental goals, and expected behavioral outcomes. The behavioral outcomes will be further classified as desirable changes in cognitive, affective, and competency or action pattern domains of behavior. The Program Development personnel will have the responsibility for performing this operation. The system or classification of desirable learner behaviors will then serve as a major point of departure for determining the teacher behaviors necessary to accomplish these objectives.

Specifications for Teacher Behaviors

Teaching behaviors essential for effective instruction in the elementary school are to be determined on the basis of what are found to be desirable pupil behaviors until decision is made regarding desirable pupil behaviors this document can only suggest what might be contained in the document.

A basic decision in determining teacher behaviors might be that a teacher must be proficient in at least two broad categories of learning: (1) knowledge, skills, and attitudes which are needed for professional performance, and (2) characteristics necessary for assuming intelligent leadership in our society. Specific teacher behaviors would be reported by two broad categories which might be entitled: Professional Education, and General Education. Further subdivisions would be required.

A model of optimum teacher effectiveness might then be constructed which would identify the main tasks for elementary teacher performance through analyzing the specific behaviors used in connection with them. The behavioral elements would then be used to establish performance tasks to be learned by prospective as well as experienced elementary teachers who are not competent in them.

A body of information concerning important teacher behaviors is already available as a result of research studies carried on by Hughes, Flanders, Smith, Ryans, Bellack and others. Certain data derived from these studies indicate that there are selected areas of behavioral competencies in which teachers need to work more effectively with elementary school children. A teacher assumes a variety of roles while carrying on his profession in an elementary school.

These roles appear to involve: (1) instructional performance, (2) self-directive, (3) personal-social interaction, (4) communications, (5) academic area (e.g., language arts, social studies, mathematics, science, etc.), (6) professional conduct, (7) interpretation and use of research and development, and (8) team participation. Teacher behaviors for these and other recommended areas are to be formulated and refined through the cooperative efforts of the following types of individuals: (a) representative personnel from institutions of higher education, (b) state department of education personnel, (c) representative local school district personnel, (d) lay personnel from selected state and local resource centers, (e) Department of Health, Education, and Welfare personnel at national and regional levels, and (f) technical and consultant personnel from across the nation.

The behaviors specified through the cooperative efforts of the above personnel could then be grouped in terms of the proposed categories of behavioral competency.

Each behavioral outcome could be translated into a set of performance tasks and students would be expected to demonstrate proficiency in performing these various tasks as he advances through the instructional program.

The system of behavioral tasks specified in relation to the recommended categories of behavioral outcomes might be regarded as the specifications for teacher professional behaviors for the Georgia Model Teacher Education Program.

The General Education might be defined as that which deals with man, his relationships to himself, to other men and to his environment.

Students will be expected to acquire understandings, attitudes, and skills related to the following types of developmental goals:

A background of general knowledge in the humanities, social sciences, and natural sciences.

A particular competency in the subject matter of his teaching fields, and habits of reading and study which keep him abreast of them.

A growing understanding of democracy in relation to all our institutions and human relationships . . .

A skill in communicating effectively with children and adults in speech and writing.

A broad and wholesome interest and an aesthetic taste and appreciation.

Specifications for Essential Conditions

The October 1968 model will set forth specifications for the facilities, equipment, programs, schedules, and organization that are deemed necessary in order to produce professional workers with the desired characteristics.

Regarding facilities it will indicate the kinds of classrooms, laboratories, demonstration centers, language laboratories, seminar rooms, and computer stations required. Equipment lists would include audio-visual instruments from film projectors, tape recorders, and overhead projectors to more recently designed computerized teaching machines. Instructional programs would be specifically named if available , otherwise specifications for what is needed would be presented in detail. There would be a description of the sequence for presentations of treatments and of the overall organization of the Model program.

As for learning activities there would be mention of instructional programs best carried out through seminars, independent study activities and laboratory experiences. In addition is the likelihood that newer approaches and/or content would be included: programmed texts such as Mager's Preparing Instructional Objectives (1962), filmstrip-tape programs such as Popham's "Educational Objectives" (VIMET, 1967), simulated laboratory programs such as Cruickshank, Broadbent, and Bubb's "Teaching Problems Laboratory" (SRA, 1967), and clinical analysis techniques such as micro-teaching (Stanford University) and interaction analysis (Flanders).

To prepare students in certain aspects of the sciences and arts it would be in order if it were found that certain technological developments such as computer assisted instruction with specifically named programs were a part of the specifications evolving from the review of the literature and recommendations of specialists.

It is expected that in preparing the specifications for the "conditions" that considerable attention would be given to organization for instruction. This will be done in the light of recent considerations that a high level of proficiency in accomplishing key tasks and high levels of cognition in academic and professional areas of learning are superior to striving toward high grade point averages. It may be that even the traditional semester and academic quarter will be set aside for more effective approaches to time distribution and individual differences.

The undergraduate teacher education program might be organized into three levels of developmental preparation--introductory, intermediate, and advanced. The introductory level could be comprised of a broad range of professional education, academic area, and field preparation experiences, and might extend over a two year period for some students. The next two levels might be comprised of more specialized preparation experiences and each could extend over a shorter or longer period depending on the capabilities of the student. Each level of preparation experience could be developmental in the sense that the objectives, procedures, and materials would be defined, implemented, evaluated, and revised both when teachers are going through the program and during their first few years of public school performance.

This example of a model design would be approached as a total context-system design. Vertically, it would extend beyond the normal period of a college education. Horizontally, it would extend beyond the confines of the university community and interrelate a participant's professional education and academic area preparation experiences with relevant field experiences located in the broader community of public school operations. Experienced elementary teachers would follow a similar pattern, except that they would do so using a reverse direction. They would move from the field experiences, and after diagnostic evaluation be guided into a relevant advanced preparation program of professional education and/or academic area experiences.

Specifications for Candidates:

The third main set of specifications to serve as one of these will be those which describe the student who may be admissible to the model teacher education program.

It is anticipated, however, that the student selection procedures will include tests rationally based on determined prerequisite behaviors conducive to success in teaching and related to the domains of behaviors: cognitive, action patterns, and affective.

Among the factors to be considered in the cognitive domain are verbal ability, numerical ability, and general information. Tests for this domain are likely to be selected from the existing inventory to measure the candidate's information, and processes of comprehension, analysis, synthesis, and evaluation. Measures likely to be applied to action pattern are demonstrations, checklists, rating scales and recordings. As regards factors within the affective domain, tests in the form of attitude scales, observations, and sociograms would likely be designed to obtain the measures. Depending upon the defined requisite teacher behaviors other kinds of measures may be obtained and evaluated.

Specifications for Evaluation:

The specifications for the evaluation procedures as with those for the essential conditions and selection procedures will be dependent upon many prior decisions; especially those regarding the objectives, pupil and teacher behaviors, and essential conditions.

The evaluation procedures will, however, have certain basic characteristics. The procedures will be based upon the defined objectives of the system. The procedures will sample, as extensively as feasible, teacher behaviors identified as supporting those objectives. The evaluation procedures will measure proportionally the mental process as defined in the objectives. The behaviors will be drawn from the cognitive, action pattern and affective domains proportionally to the importance of that domain to the objectives.

Behavioral sampling, type item, and validity have been serious questions in measurements, especially on the elementary school level.

In these specifications efforts will be made to break through the limits of the past. Such recording equipment as the tape, video tape, and peripheral equipment in the computers will be utilized to more adequately sample behaviors when observational techniques are used. Again the computer equipment will be used to store more extensive data on achievement and performance. The technique of standard suggestions early in the apprenticeship program will be investigated and utilized if effective in identifying interest and motivation. Again, critical incidents in the apprenticeship program related to the teacher's attitude will be recorded as a possible indicator of longevity in the teaching profession.

Specifications for evaluation procedures will cover at a minimum four aspects. First, they will provide for determining which of the various treatments or activities in the instructional program results in the teacher achieving the desired behaviors. Secondly, they will be designed to measure the relationship between achieving those behaviors and success in teaching. Success in teaching will include the teacher's classroom performance and the pupil's learning. The pupil achievement measures will satisfy the requirements imposed by the identified objectives, student behaviors, domains, mental processes and desirable test characteristics. The evaluation procedures will provide for an analysis of results to identify which factors predict success and longevity. Finally, the evaluation specifications will describe a model to be employed in improving the cost effectiveness of the teacher education system.

The exploratory effort consists of four parts. The community survey is conducted to define the limits of the unique factors related to a school program such as the social, economic, health, and technological aspects. The available resources are searched for information upon which to develop an improved elementary education program. The resources include relevant literature in the library, knowledge and experience of authorities, evaluated or recommended educational practices, and money available for financing an improved elementary school program. The nature of the learner is defined in terms of his abilities, knowledge, experience, skills, and health. Each category of students represented in the community is to be defined. Reports and recommendations of various professional societies on teaching techniques, sequences and student experiences are collected for reference purposes. The exploratory effort provides a partial basis for identifying the elementary teacher and pupil behaviors.

The behaviors of the pupils are necessary to completely and accurately define those of the teacher. In addition, the teacher must know and be capable of performing certain of the pupil behaviors in order to

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(Mrs.) Dorothy G. Mueller,
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properly teach the students. The criteria to be used in selecting the behaviors are those of supporting the defined objectives, satisfying the community requirements, conforming with the nature of the learner, and compatability with the community resources.

Teacher and student behaviors provide the base for defining the specifications. Specifications are defined for the student teacher and in-service teacher. The student teacher specifications cover the areas of general education, professional education, subject knowledge, training materials, development and apprenticeship program. Specification for the in-service teacher will be those of the student teacher less those already possessed by the in-service teacher. The specifications will indicate specifically the training requirements. Expressed in terms of knowledges, understanding, abilities, tasks, skills, and attitudes to be developed in the teacher by the program of instruction.

If the Georgia specifications for the Teacher Education Model are to be intelligable for other institutions, the specifications need to be accompanied by descriptions of kinds of elementary school environments for which the specifications for teacher behaviors were prepared. The model should indicate, for example, such basic information as the extent to which instruction would be centered on one teacher with a limited number of specialists for a short duration or whether the class would be conducted on a daily basis by a number of specialists. In addition, the model should indicate the partitioning, if any, and duties. Information of this nature is essential for other institutions to use in implementing the program.

A cost-effectiveness model will be developed for the Georgia Plan of Teacher Education. The Abt Model prepared for the Office of Education will serve as a reference. The developed cost-effectiveness model will be appropriate for the Georgia Plan, and will consist of three major parts: input, process and output. The selection, evaluation, and criterion measures will appraise, respectively, the three major parts. Knowledgeable manipulations of the model will be performed to approach optimization.

CHAPTER 4: A PROPOSED NEW PROGRAM FOR TEACHER EDUCATION

University of Massachusetts

Dwight W. Allen, Dean

Summary: A total redefinition of the teacher education program, based on performance criteria and multiple routes to the advancement in these criteria, is proposed. The program is to be designed to prepare a variety of people in different ways for various emerging roles.

Given these goals, neither course listings nor time and unit requirements are sufficient. In fact, these are indicated as the boundaries from which the proposal seeks to escape. Conceptual organizers and planning principles are to be used to direct the program planning process.

A major task of the planning is the development of the preformance criteria for each components of the program. Most schools of education define their programs in terms of courses and activities offered. The Massachusetts' approach will be to define the behaviors, skills, and attitudes that a teacher should have upon completion of the program. Trainees will have varying alternatives in sequence and time to arrive at criterial points.

Both secondary and elementary teacher training will be developed from the same core area.

Teacher training goals:

1. Follow as many widely differing strategies as possible to explore training consequences, relative efficiency, and relative acceptance and appreciation by the trainees.

2. Provide for continuous diagnosis of needs of each trainee and constant evaluation of program components in meeting these needs.

3. Provide two or more equal and alternative paths to the same objective.

4. Develop a close relationship between pre-service and in-service training to insure that teacher training never ends, i.e., continuous renewal.

5. Specific performance criteria, based on task analysis of teacher training are to be identified. Assessment procedures and devices will be developed for monitoring trainee.

Performance Criteria as a Planning Principle:

Use of performance criteria requires specification of behaviors a trainee must have when instruction is completed. Performance criteria may be reached by a variety of paths, and will be developed in three broad conceptual areas: content knowledge, behavioral skills, and personological skills.

Content Knowledge:

The restatement of content requirements in terms of performance criteria is probably the major thrust of the planning. Content knowledge is derived from many sources, of which formal course work is only one.

Content knowledge is defined to include the depths and breadth of knowledge most often seen deriving from both undergraduate liberal arts courses and start from within the School of Education. The latter is regarded as an extension of the former, but focussed upon content relevance and organization for elementary and secondary pupils.

Content criteria development requires collaboration between all faculty in the University. Respected academicians who are concerting themselves with curriculum and teaching at the elementary and secondary levels will be used to enhance the development of content criteria. The focus of planning will be on defining goals which must be achieved by those planning to teach certain subjects (or levels) and then defining performance that indicate the achievement of these goals by the candidate.

Three kinds of goals and related performance are suggested: (1) What general cumulative knowledge proficiency must be demonstrated by an "educated" candidate? (2) What type of specialization and in depth knowledge should be demonstrated in order to infer future effectiveness in the role for which he is preparing? (3) What should the person be able to do with knowledge before he is ready for his professional role?

Performance criteria reflect the different professional roles of candidates, and differentiated requirements are to be established for each. Roles suggested were to teach: (1) kindergarten and preschool, (2) primary and preschool, (3) intermediate, (4) junior-senior high school, (5) a single subject at several levels, (6) two or more related subjects at several levels.

Success in the project will be measured by the extent to which course and course equivalents can be replaced by performances that are not course bound.

Behavioral Skills:

Development of technical skills of teaching is a basic goal of teacher education. A basic premise is that much of teaching consists of specific behaviors. The aim is to analyze the complex act of teaching into simpler more easily trainable skills and techniques. Micro-teaching is to be used for developing the specific teaching skills that have been and will be identified. This involves teaching a small group, usually four pupils, for a period of five to twenty minutes.

A technical skills approach includes more than mechanical competence. The teacher trainee will be encouraged to be the instructional manager and thus the decision-maker. The trainee must decide when to use which skills to meet instructional goals and the needs of the pupils; and what activities precede and follow an instructional sequence. The intent is to develop in trainees a wide variety of alternatives in individualizing instruction, motivating students, and improving the effectiveness of his instruction.

Personalogical Skills:

Good teaching involves more than wide use of technical skills. Teachers must deal with student feelings, community perceptions, and their own personalities. Experiences that give trainees opportunity to become personally involved at the affective level will be developed.

Development of personalogical performance criteria will be sought through arrival at a concensus of relevant goals. A dual analysis is proposed by: (1) study of pertinent research literature in the affective area, (2) extrapolation of goals that are implicit in current training techniques such as sensitivity groups, role-playing, and interaction analysis. Another dimension was located in the realm of Rogers "attitudinal sets." If the teacher is a facilitation of learning, then such personal qualities as "realness, acceptance and empathic understanding become essential.

It was recognized that evaluation of personalogical developments was conceptually demanding and required value judgments. It was argued that characteristics of a facilitating teacher could be made operational and performance criteria developed.

Hierarchy of Teaching Competencies:

Three areas are presented--subject matter, presentation, and professional decision-making competencies.

Competency	Primary skills needed	Secondary skills needed	Appropriate instructional modes
1. Subject matter	content knowledge	---	programmed and computer-assisted instruction, videotape presentation, independent study, formal course (lecture type), seminar
2. Presentation	behavioral skills	content knowledge	micro-teaching, classroom observation (live and videotaped), independent study, use of classroom simulation materials
3. Professional decision-making	personalogical skills	behavioral skills and content knowledge	student teaching, classroom observation (live and videotaped), micro-teaching, small group work, use of classroom simulation materials

Development of these three competencies serve as a guide for construction of the teacher education program. They are interdependent and cumulative.

Instruction designed to develop these competencies, was discussed under same three headings:

1. Subject matter competencies

In order to transmit knowledge, the teacher must have assimilated the appropriate content knowledge. The traditional method has been through formal lecture courses outside of Edudation. Allen claims that with effective development of performance criteria other instructional modes may be used--closed circuit television, broadcasts, programmed instruction including C.A.I., independent study.

Close coordination of personnel in academic and education departments is essential. Also consultants expert in development of behavioral objectives, instructional systems, and operations research are deemed necessary in the planning phase.

2. Presentation competencies.

An adequate content knowledge base is a necessary but not sufficient condition for effective teaching. One needs appropriate behavioral skills in order to translate the content knowledge into a teachable form. Learning theory suggests a variety of conditions conducive to knowledge acquisition. The technical skills approach will be used to translate learning principles into teaching principles--e.g., set induction, closure, clarity of communication, and repetition and the use of examples.

A variety of instructional experiences exist that can provide the teacher trainee with practice in presentation skills--e.g., micro-teaching, classroom observation, video-tape models, and tutoring.

The designers will use videotape recorders to individualize instruction, i.e., to record teaching in classroom and provide feedback; to do research or analysis of teaching behaviors; to develop model tapes for training purposes.

3. Professional Decision-Making Competencies

The teacher is the professional decision-maker in the classroom. He must decide what is to be taught, how it should be taught and what techniques should be used. He must also consider the personalogical variables that might affect his outcomes. The more content and presentation competencies a teacher has, the more alternatives he has available for meeting his instructional objectives. Personalogical variables also affect the instruction. By constructing performance criteria in the content, behavioral and personalogical areas, and developing instructional systems by which these criteria are met, a trainee will receive the prerequisite skills and knowledge for making classroom decisions.

Practice in making decisions is necessary. Kinds of activities that provide this practice are: classroom simulation experiences, microteaching experiences, and observational experiences (both live and videotaped), small group work and student teaching.

A unique opportunity to provide professional decision-making experience is the reorganization of the elementary school laboratory so that it will be staffed as much as possible by the trainees. With a few master teachers to direct the operations, it is claimed that the major instructional duties can be handled by student teachers.

Familiarization with relevant concepts from psychological and sociological theory should be included in the teacher trainee's experience. Performance criteria will be designed with a major emphasis on practical field experience and supervised independent research.

Differential Training for Differential Staffing:

Up to the present teachers have been prepared for the egg-carton school which supposes that all teachers are the same, and are essentially interchangeable. All teachers have essentially the same job description regardless of ability. More diverse scheduling alterantives will require a different kind of teacher.

Toward a Differentiated Staff:

At present, a newly certified teacher can replace a teacher of thirty years experience. The new teacher is expected to do exactly the same work, but with a lower salary. At present the promotion system leads the teacher away from the students into counseling or administration. Also a brilliant and enthusiatic teacher now receives generally the same rewards as the teacher who is bored and incompetent. The current model of a teacher's role originated in the nineteenth century Normal Schools. A teacher's job is now much more complex, and teachers are better prepared than their Normal Schools counterparts. But we still have an indifferentiated staff, reminiscent of medicine at the beginning of the century, when a family doctor performed the full range of medical services without nurses, laboratory technicians, or specialists.

Selection:*

The emphasis will be on finding the right program for the applicant, rather than the right applicant for the program. Since there are alternative routes to the same skills, the program will be able to individualize instruction. Also variable entry and exit points will permit a trainee to begin and complete his training in a variety of times. This program can be entered at the freshman, sophomore, junior, or senior level. A kindergarten through twelfth grade training is provided. It is proposed to explore the possibility of admitting a proportion of candidates without regard to normal selection criteria in order to test generalizability of training techniques over a broad population of prospective teachers.

In-service components:

The program is strongly commented to diagnostic in-service training and availability of University facilities to teachers long after graduation from the program.

A. Innovation provides justification for inservice training. Teachers cannot be expected to be prepared to meet dramatically different contexts without additional preparation.

B. Through sequences and training for different roles, the program will develop a blurring of distinction between preservice and inservice learning in accord with the principle that a teacher's training never ends.

C. For a teacher who wants to do some research, graduate students will be available for consultation and provide access to University facilities.

D. Technological services of the University will be used to develop greater school-university cooperation, including: (1) videotape services, (2) the microteaching materials currently developed by Allen, Ryan, Bush and Cooper; (3) the simulated teaching materials developed by Cruckshank.

E. Supervisory training will be developed for public school personnel.

F. Extensive and intensive relationships will be developed between a selected list of schools to assure inservice training as a part of the total school-university cooperation.

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*This is allocation or classification rather than selection. See L. J. Cronbach & G.C. Gleser Psychological Tests and Personnel Decisions, 1965.

Faculty Requirement: Inservice Training for College Staff

The general principle for faculty inservice will be duplication of the skill training being provided to trainees.

A. The faculty will teach for small sequents of time in the laboratory school.

B. The faculty will perform differentiated roles in the School of Education, with team teaching and colleague supervision.

C. Consulting help will be available to faculty--e.g., help in writing behavioral objectives, computer assisted instruction. By orienting the program to research, the faculty will automatically interact more extensively with each other and with faculty of other interests, perspectives, and training.

D. Inter-institutional cooperation.

E. Faculty from other University departments released for a semester will serve in advising, teaching and/or planning capacity.

Evaluation:

Evaluation has two functions:

1. Improvement of the program--to assess various parts of the program has on the trainee's performance. Performance will be defined and conceptualized broadly so as to include not only those objectives specific to the particular component but also those general outcomes which are beyond the content of the component yet relevant to teaching. A rationale for this type of evaluation procedure is provided by Cronbach.*

> . . . An ideal evaluation would include measures of all the types of proficiency that might reasonably be desired in the area in question, not just the selected outcomes to which this curriculum directs substantial attention. If you wish only to know how well a curriculum is achieving its objectives, you fit the test to the curriculum; but if you wish to know how well the

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*L. J. Cronbach, "Evaluation for Course Improvement," New Curricula, (ed.) Robert Heath, New York, 1964, p. 243.

curriculum is serving the national interest, you measure all outcomes that might be worth striving for.

2. Evaluation for program improvement must feedback information derived into the program. The program must also retain its flexibility to allow for rationalized revisions at various points during its development.

3. Components of the program should be assessed with reference to ideal outcomes. The theoretical rationale for the program is to construct alternatives which interact with various trainee aptitudes and thus the major thrust of the evaluation should be to assist the planners in building each program as strong as possible rather than suggesting the relative merits of the various components as they exist at any single point in time.

4. Analysis of the carefully planned evaluation procedures can be an invaluable aid in the systematic accumulation of knowledge concerning teaching and teacher training. Program improvement evaluation of this kind provides information not only on *if* a particular training experience is effective in producing some performance, but also how that experience produces the performance. Evaluation and research efforts thus become complementary.

Individual Evaluation.

1. The proposed commitment to the performance criteria approach demands a conscientious and extensive program of individual evaluation. A student's progress through the competency areas will require regular and frequent monitoring. Information on each trainee must be systematically utilized to provide feedback and to make program decisions. Formulation of effective performance criteria stated in behavioral terms makes evaluation measures clear-cut; however, the administration and processing of large amounts of individual data will be a major task. It is proposed that a task force made up of systems analysts, computer programmers, performance criteria experts, and measurement consultants be established to investigate and develop the most appropriate and efficient techniques for large scale individualized monitoring.

2. An essential feature of individual evaluation is the fusion of assessment and feedback with diagnosis. The same technological facility which will serve to train the student will do double duty for individual evaluation and triple duty as diagnosis. The advantage is that emphasis can remain consistently on the diagnostic function. Some examples are: (a) videotape, (b) micro-teaching, (c) supervision.

3. Another aspect will be to provide the trainee with some means of self-analysis. For example: classroom interaction analysis, OScAr,* and the self-evaluation made possible by clearly stated performance criteria.

4. The extensive amount of data collected for individual evaluation also have relevance for research in teaching. These data along with the data collected for program evaluation, will be the basic input for a consortium type educational data bank. This data bank will not merely be storage house of teaching training information, rather it will serve as a positive active force toward the stimulation of a broad range of research efforts by varied types of institutions, department, and personnel.

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*D. M. Medley and H. D. Mitzel, " A Technique for Measuring Classroom Behavior," Journal of Educational Psychology 49:86-92, 1958.

CHAPTER 5: A PROPOSED NEW PROGRAM OF ELEMENTARY SCHOOL TEACHER EDUCATION

Michigan State University

I. Introduction And Rationale:

Unique components of the program include (1) new approaches to course organization, content, and emphasis; (2) a broad base in the behavioral sciences; and (3) developmental clinical experiences beginning in the freshman year and including a full year of internship. The proposed program will be comprised of several inter-related elements:

1. A broad, basic core of general education.
2. A study of human learning capacity based upon behavioral science concepts and research.
3. An analytical study of the teaching act in differing types of educational environments.
4. A development of clinical and case materials in teaching, emphasizing decision making in the teaching-learning process.
5. A review of the fields of knowledge in terms of their structure and content, emphasizing concepts and sequence of developing disciplines with emphasis on the methods of inquiry and learning, characterizing modes of scholarly endeavor in different disciplines.
6. A year of intern teaching as part of an instructional team (a behaviorally oriented clinical professor, intern consultants, auxiliary services and materials) from the University and public school.

7. A professional leadership role for experienced and highly competent teachers to become curricular innovators, consultants, team leaders, and intern consultants.

8. A clinical cycle that facilitates continual flow of personnel, materials, and information from theory to practice to theory, so that the ongoing program will be continually revitalized.

Significance of Behavioral Science Base:

During the past few years a significant body of knowledge has accumulated relative to human learning. Research in personality components, motivation, learning strategies, social interaction, communication, mass media, human variability, and environmental systems could contribute to improvement in teacher education programs. These resources from many different fields must be tapped by those responsible for the education of elementary school teachers if functional and relevant educational programs are to emerge. A broad base in the behavioral sciences would enable a teacher to function effectively in an atmosphere of ever increasing cultural change.

A basic role of the teacher is decision making. Emphasizing relevant behavioral science theory and research would contribute to basic understandings necessary in making these decisions. This stance becomes even more vital in the evolving environmental and educational scene in which teachers will be working.

Significance of Clinical Experiences:

Teaching requires a complex behavioral repertoire including the full range of thought processes, knowledge, communication, and action. A broad liberal education forms the basic cognitive-knowledge and inquiry-technique base for teaching. Study of relevant behavioral sciences focuses attention upon human learning and interaction. Continual and sophisticated translation of these basic elements into meaningful strategies of teaching requires a structured clinical setting. Analysis of the teaching of others, simulated teaching episodes, contact with children in a variety of situations, experimentation with teaching strategies and ever increasing autonomy and responsibility provide needed experiences.

Analysis of learning situations is integral to good teaching today. Tool of analysis can be mastered through individual study, but require simulated and real school-learning environment for translation.

II. The Educational Program

The propsed preparation program for pre-service and in-service teachers is composed of a number of specific and relatively independent components. For each component a set of behaviorally-stated terminal objectives, procedures, and evaluative techniques would be developed. Necessary prerequisite competencies for successful development within each component would be stated. The program must be individualized to acoommodate the many varied competencies, interests, and backgrounds of elementary teachers. Further, the needs of a variety of urban and rural, departmentalized and non-departmentalized, team taught and self-contained classroom organizations must be met.

Figure 1 outlines one way in which the various components in a teacher preparation program could be dovetailed.

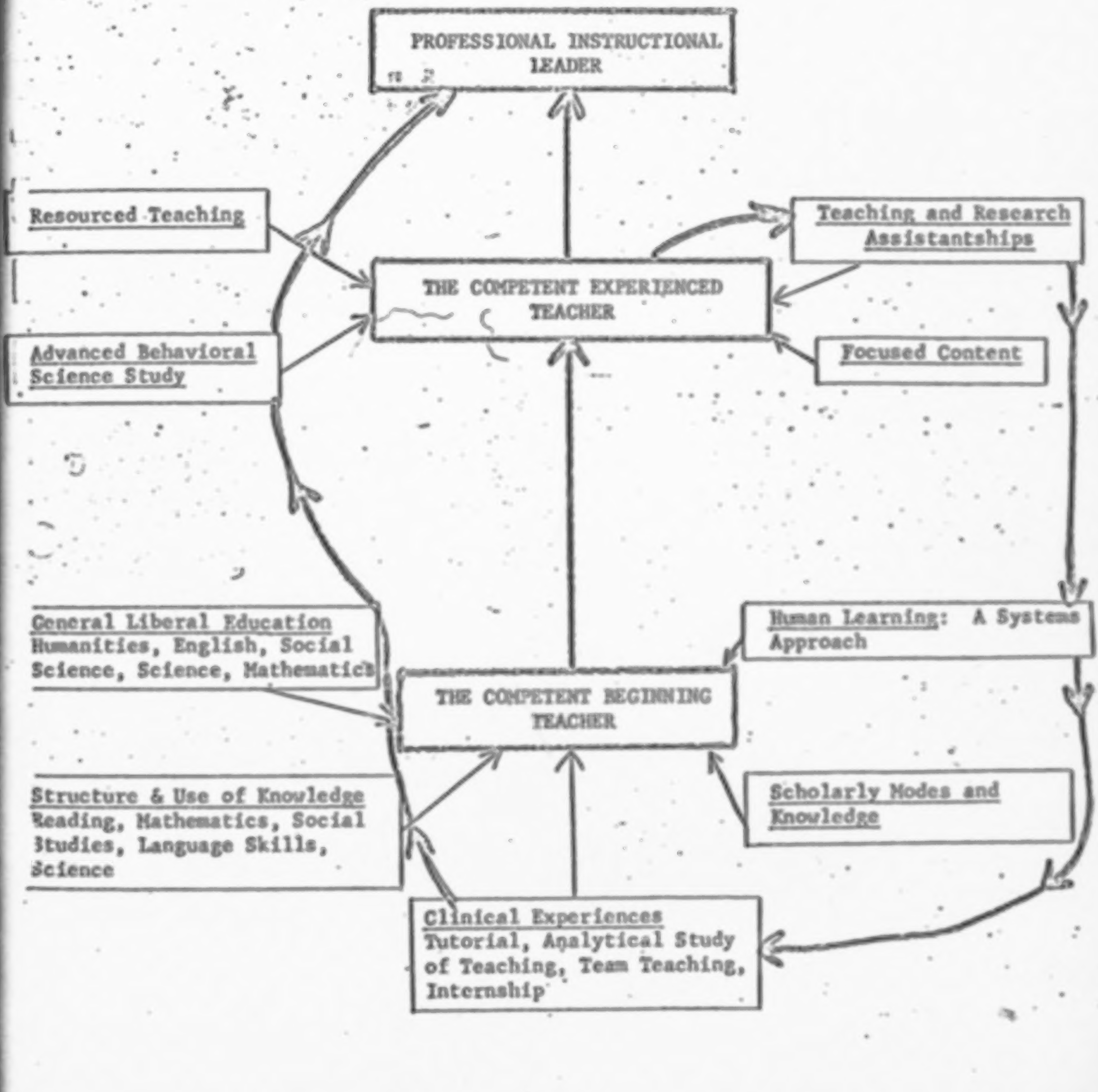
Academic Components:

General Liberal Education: A core of general-liberal education designed to foster individual fulfillment and to prepare citizens for participation in our democratic society should form a basic element in teacher preparation. The program would devote attention to understanding the role language plays in a society; to comprehending the physical and biological aspects of the world and universe and their constructive social force; to an understanding of society and cultures, both here and abroad; to enhance man's sensitivity to his own role in modern societies; to grasp relationships as expressed in mathematics; to conceptualize the potentialities in man's historical past and the transient uncertain present; and to relate all these to human behavior.

The basic core of general-liberal education would not be a series of the usual type survey courses. This program component would place emphasis on the contributions of the various disciplines of the liberal arts and the sciences to the understanding of human nature, society, and the world in which we live.

Scholarly Modes and Knowledge: Building on a broad general-liberal arts foundation and directly related to the component "Structure and Use of Knowledge" in a teacher education program, there is proposed a series of experiences designed to develop depth understanding of physical science, biological science, mathematics, social science, and the English language. Experiences within this component of the program would draw heavily from areas of the behavioral sciences, natural sciences, and social sciences, and would focus on those specific concepts related to the elementary school.

FIGURE I. SCOPE OF MODEL PROGRAM


PROFESSIONAL INSTRUCTIONAL LEADER
Resourced Teaching
Teaching and Research Assistantships
THE COMPETENT EXPERIENCED TEACHER
Advanced Behavioral Science Study
Focused Content
General Liberal Education
Humanities, English, Social Science, Science, Mathematics
Human Learning: A Systems Approach
THE COMPETENT BEGINNING TEACHER
Structure & Use of Knowledge
Reading, Mathematics, Social Studies, Language Skills, Science
Scholarly Modes and Knowledge
Clinical Experiences
Tutorial, Analytical Study of Teaching, Team Teaching, Internship

Professional Education Components

Clinical Experiences[*] *I - Tutorial:* Early experience with children in a teacher education program is deemed important for reality testing purposes. During the first two years of college, the student would work in one or more child-related roles. During this period he might work with children as an assistant elementary teacher, at the local YMCA, in a children's hospital, in Head Start programs and other pre-school programs, settlement house, summer camp or scouting programs. In general, the purpose of this experience is (1) role identification, (2) self-screening, (3) reality testing of children-models, (4) sensitivity training, and (5) general awareness of people--their hopes, dreams and ways of acting.

Human Learning: A Systems Approach--Sequence I: The exploration of human capacity, the understanding of environmental systems and the inquiries into cognitive development are the three basic behavioral areas which planned educational experiences must bring into interaction. Issues in learning theory and research would be examined to explain the impact of environmental systems on the decision-making processes by teachers.

Clinical Experience II - Analytical Study of Teaching: This experience provides an opportunity to test teaching skills in a simulated or real classroom. Three types of experiences are contemplated in this component: (1) each student analyzes a set of classroom vignettes such as those developed by the Learning Systems Institute, Michigan State University or visually recorded classroom scenes. What occurred? What relevant conditions existed? What decisions did the teacher make? What were the consequences? What suggestions would improve the learning?

(2) each student participates in simulated classroom episodes, such as those produced by Bert Kersh. This permits the student to initially translate ideas from analysis into practice.

(3) each student works with three to five pupils in a micro-teaching experience. These episodes are to be video-taped so that the student

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[*] For a more detailed description of the Clinical Experience see: Ted W. Ward, "Professional Integration and Clinical Research," *The Supervisor: Agent for Change in Teaching*. Association for Supervision and Curriculum Development. NEA, 1201 Sixteenth St., N.W. Washington, D.C., 1966.

can review and evaluate his teaching performance as he works on various segments of the total teaching act.

Teaching is a complex operation, involving analyses of many variables and selection from a galazy of potential decisions. Control of the introduction of these variables in the initial phases of teacher education would permit an orderly and systematic introduction to teaching.

Throughout the teacher preparation program, students may transfer from teacher education to other programs in the University. However, several designated points would serve as screening periods in the sequence. During the Clinical Experience II, some students would be counseled out of teacher preparation on the basis of their performance and the results of a testing program. Students counseled out would either (1) transfer to a less rigorous program for ancillary school personnel, (2) enter another curriculum in the University, or (3) drop out.

Clinical Experience III - Team Teaching.. One principal departure from normal student teaching experience would be the assignment of students as team members in an elementary school. A team would consist of (1) an intern consultant,* (2) four intern or experienced teachers and (3) two student teachers. This team of seven would function as a unit in providing instruction in four elementary classrooms.

Greater flexibility in student teaching would be possible as students could have extended opportunity to: (1) become acquainted with the organization of schools and the functions of various school personnel, (2) analyze the performance of other team members, and (3) receive assistance from senior team members.

Structure and Use of Knowledge. Extended study of instructional strategies with particular emphasis on specific content included in the elementary school would be the focus within this component. Mathematics, science, language skills, social studies and reading areas would be selected for specialized study.

Clinical Experience IV - Internship. Students would be assigned full-time to an elementary classroom under the guidance of an intern consultant. Autonomy and responsibility for all classroom activities, with significant assistance from university and public school resources, would characterize this phase of teacher education. The intern would meet regularly with the intern consultant to discuss means of improving instructional strategy and skills.

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*the intern consultant is a highly-skilled experienced teacher selected from an elementary school to work full time with intern teachers.

Human Learning-A Systems Approach - Sequence II. Concurrent with internship, students would study the environmental systems which influence the growth of the human being and with which the educational process must concern itself. This area would be planned and operated under the assumption that a pupil lives in a series of environmental systems: (1) his own internal environment, (2) the environment created by the family, (3) the environment created by the school, (4) the environment created by the community, and (5) the larger cultural environment consisting of elements and forces from the national and international arenas. The more skill and perceptivity that can be developed in analyzing positive and negative elements from these several environments, the more sophisticated response the educated worker can make in diagnosing and developing behavioral competencies of the pupil. The methods, concepts, and principles of environment investigation would be one of the major purposes of this area.

Some general purposes of this component are to aid students in: (1) perceiving the school as a social institution with its present and future relationships to other major institutions of our culture and selected other cultures, (2) utilizing such basic concepts as stratification, role, status, and prestige as tools of analysis for clearer understanding of classroom, faculty, institutional and societal situations, (3) understanding the potential and actual contribution of non-school agencies to curricular experiences of youngsters, and (4) formulating a meaningful relationship among the many factors which influence the pupil's development. Upon successful completion of the program components the student would typically be granted the baccalaureate degree.

Clinical Experience V - Resourced Teaching

A joint school district-university arrangement which includes seminars and classroom assistance would be developed to promote the continuing growth of certified teachers. Human and material resources, both from the local school system and the teacher education institution, would be committed to support the beginning teacher. In-service programs dealing with the best known teaching techniques, content, and analysis tools would be planned to meet the individualized needs of practicing teachers.

Teaching and Research Assistantships. Changes are inherent in our present culture, and a built-in recycling procedure is necessary to revitalize continuously the teacher prepration program and to keep it up-to-date. The planned return of some teaching personnel to the college to work with undergraduates offers an opportunity for this recycling. Further, through such programs the competencies of practicing teachers are enhanced. Some teachers would serve primarily as teaching assistants in the college or university. They would work in Phase I and II of the clinical experiences. They would contribute to the development and refinement of materials used in analyzing teaching behavior, simulation, and micro-teaching. Case materials would be developed from these experiences to provide material on which to base earlier activities for the developing teacher and colleagues in the various subject matter fields outside the College of Education.

Other assistantships would focus primarily on educational research. These research assistants would design evaluative instruments for assessing student progress and trying out such devices. They would develop elementary pupil assessment and diagnostic instruments.

Focused Content Study. In-service teachers would continue to study content in a subject field such as mathematics, science, or social science to extend their own understandings in a selected discipline. Development in the various disciplines with special attention to the mode of inquiry and conceptual sequence as it might evolve over the years would also be a part of this component.

Advanced Behavioral Science Study. The graduate work in behavioral sciences for in-service teachers could be directed toward a more sophisticated understanding of the variety of environments within which children develop and the creation and utilization of the diagnostic, prescriptive, and evaluative tools for working with them in the school-community situation. This would require a very intimate working relationship with the biological and social behavioral sciences.

Upon successful completion of a planned program of study and a minimum number of years of successful teaching, the student would typically be granted the Master's degree.

Clinical Experience VI - Professional Instructional Leader. A small proportion of post-M.A. teachers with a highly developed clinical stance, leadership ability, and demonstrated success in teaching would be selected for a "professional instructional leader" program. While each instructional leader's preparation would be tailored basically to individual job descriptions, it would include special seminars in research and technology, educational strategies, and clinical practice. Part of the student's time might be spent in writing curriculum materials, trying out and evaluating new materials, and studying in exemplary schools.

Role Descriptions Auxiliary to Teaching. During various aspects of the preparation programs, some students would be counseled out of are enhanced. Some teachers would serve primarily as teaching assistants in the college or university. They would work in Phase I and II of the clinical experiences. They would contribute to the development and refinement of materials used in analyzing teaching behavior, simulation, and micro-teaching. Case materials would be developed from these experiences to provide material on which to base earlier activities for the developing teacher and colleagues in the various subject matter fields outside the College of Education.

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Role Descriptions Auxiliary to Teaching. During various aspects of the preparation programs, some students would be counseled out of teaching. The first specific and structured avenue for this process occurs during Clinical Experience II, Analytical Study of Teaching.

Students whose aptitudes, interests or achievement preclude their continuation in the regular teacher preparation program may elect to prepare a paraprofessional. Job descriptions of several paraprofessional roles would be identified and recommended training programs. suggested. These would include such non-teaching roles as (1) educational researcher, (2) media specialist, and (3) educational management.

Specifications would include objectives and potential training programs for each of the above paraprofessional jobs.

Supporting Administrative and Organizational Structure for the Program

Information Retrieval System. Systems to improve the accessibility of student records, instructional materials, and educational research reports must be planned for. Any program that aspires to recognize and allow for individuality regarding type and sequence of needed educational experiences should maintain a substantial data storage and retrieval system. Comprehensive information on students should continually and systematically be acquired and placed in rapidly accessible forms. Also, information on available instructional materials and/or experiences (e.g., units, programs, texts, educational and psychological tests, film clips, tutors, etc.) should be maintained in an information retrieval system. As the necessity for remediation or desirability for enrichment is evident, information on a given student can be recorded and simultaneously matched with appropriate and available training tools. Further, if the instructional, research, and consulting staff are to keep abreast with pertinent data and findings in their fields, a good informational retrieval system is needed to make relevant abstracts of research documents readily available.

The proposed project would develop procedures and classifications for maintaining individual student and teacher records to insure continuity of experiences, and to program component retrieval information. Through these two areas, an individualized program of teacher education can be developed, maintained, and modernized.

Teacher Education Council. Teacher education programs have long been hampered by lack of adequate channels of communication between process and product. Steps should be taken to bring the various components of the profession together. A council would be created, therefore, with representatives from the research, training and practice components of education.

Faculty and Staff Needs. A comprehensive teacher preparation program as envisioned in this proposal requires adequate and well-trained faculty. Brief outlines of needed competencies in faculty and staff would be delineated in the model.

Sources of materials, simulation programs, video tapes, film clips, and other instructional resources utilized in the program will be outlined.

II. Procedures for Developing Education Specifications

The development of educational specifications for the model outlined in the previous section involves three general tasks: (1) the development of objectives for each component in the program which are stated in terminal performance standards; (2) development and/or identification of materials to implement identified objectives; and (3) development of evaluative instruments and procedures to assess level of competence.

To insure continuity and higher level cognitive and affective objectives an information retrieval system will be used in conjunction with cataloging procedures. This assessment procedure will be based upon Bloom's and Krathwohl's taxonomies of educational objectives.*

A Coordinating Commission representing the several cooperating colleges within the University will be appointed by the project director. Members of the Commission will carefully review the development of the specifications at every stage and make recommendations for improvement.

A task force will be assigned to develop each of the following seven components of the proposed model.

1. Liberal Education Component
2. Human Learning Component
3. Clinical Experience Component
4. Scholarly Modes of Knowledge Component
5. Structure and Use of Knowledge Component
6. Auxiliary Teaching Roles Component
7. Information Retrieval Component

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*Benjamin S. Bloom (ed.) Taxonomy of Educational Objectives, Cognitive Domain, David McKay Co., Inc., New York, 1956 and David R. Krathwohl; Benjamin S. Bloom; and B. B. Masia, Taxonomy of Educational Objective, Affective Domain, David McKay Co., Inc., New York, 1964.

Liberal Education Components Development

Specific steps in developing these components are listed below:

A. Develop detailed listing of program objectives for (1) humanities, (2) science-mathematics, and (3) social science.

B. Review of categorized listing of objectives by staff and Coordinating Commission.

C. Revise objectives and place into information retrieval system.

D. Outline curriculum activities and materials which would develop stated objectives.

E. Develop evaluative procedures to assess student achievement.

F. Analyze and evaluate materials by Institute Directors, consultants and the Coordinating Commission.

G. Revise necessary materials.

H. Accept objectives, materials, and activities by Coordinating Commission.

Human Learning Sequence Development

Steps include:

A. Review literature in areas of educational psychology, psychology, sociology, philosophy, communication, and anthropology to identify the important concepts from these disciplines for elementary teachers.

B. Most significant concepts ordered according to logical developmental sequence and translated into behavioral objectives. This would be determined by (1) the structure of the disciplines, (2) necessary prerequisite knowledge, and (3) placement within the total educational program.

C. Over-all examination of objectives by behavioral scientists, teachers, teacher-educators, and Coordinating Commission.

D. Teams composed of a teacher-educators, and a behavioral scientist identify currently available materials which would be effective in developing objectives. Procedures for evaluating achievement of objectives would also be developed.

E. Teacher-educator and behavioral-scientists teams outline necessary materials and activities for development of those objectives for which none are currently available.

F. Analysis and evaluation of materials for this component.

G. Procedures and evaluative devices catalogued and put into information retrieval system.

H. Final acceptance by Coordinating Commission.

Clinical Experience Sequence Development

Step-by-step procedures in this development are as follows:

A. Clinical Experience Development Team develop tentative listing of perfomance-stated objective for clinical phase.

B. Objectives tentatively assigned to Clinical Experience Phase I, II, III, IV, V, or VI.

C. Sub-committees individually analyze and extend objectives for their area.

D. Objectives reviewed by Coordinating Commission meeting with total Clinical Experience Sequence Development Team.

Tutorial Phase Sub-Committee

E. Tutorial sub-committee (2 people) identify potential agencies that might facilitate behavioral-objective development.

F. Develop materials outlining specific tasks in which student could participate.

G. Materials reviewed by total Clinical Experience Development Team and by Coordinating Commission. Recommendations made for further improvement.

H. Final acceptance by Coordinating Commission.

Analytical Study, Team Teaching, Internship, Resourced Teaching, and Professional Teacher Sub-Committees

I. Each sub-committee identifies available materials, procedures, and evaluative devices which would develop stated objectives.

J. Total Clinical Experience Development Team reviews identified materials, procedures, and evaluative devices to assure continuity of development and to suggest potential procedures for implementing other objectives.

K. Analysis and evaluation of objectives and materials.

L. Acceptance of component objectives and materials by Coordinating Commission.

M. Necessary revisions to insure continuity during clinical experience.

N. Final acceptance by Coordinating Commission.

Scholarly Modes of Knowledge Development

The educational specifications would be developed using the following procedures.

a. Develop specific program objectives stated in behavioral outcomes for students.

b. Identify and develop necessary program materials.

c. Develop evaluative instruments based upon the stated objectives.

d. Review of program by Institute Directors, consultants and Coordinating Commission.

e. Necessary revisions of objectives, procedures, and evaluative devices made.

f. Objectives, procedures, and evaluative devices catalogued and put into Information Retrieval System.

g. Final acceptance by Coordinating Commission.

Procedural steps listed above would be completed by the date indicated.

Structure and Uses of Knowledge

Implementation requires:

a. Development of objectives, stated in behavioral terms for each of the content fields.

b. Analysis of composite sets of objectives by a staff of consultants.

c. Adoption of minimum behavioral goals for students in each of the content areas.

d. Identification of suitable instructional materials for implementation of the program objectives.

e. Development of evaluative instruments based upon the stated objectives.

f. Systematic analysis of needed prerequisites, objectives, procedures, and evaluative devices.

g. Objectives, procedures, and evaluative devices catalogued and put into Information Retrieval System.

h. Necessary revisions to insure continuity of total preparation program.

i. Final acceptance by Coordinating Commission.

Procedural steps listed above would be completed by the date indicated.

Auxiliary Teaching Roles Development

Proliferation of ancillary roles within the educational enterprise makes imperative the development of several roles. Specifically, specifications for the following roles would be developed: (1) assistant teacher within a team teaching context, (2) school-based educational researcher, (3) media specialist, and (4) educational manager.

The following steps would be included in this process:

a. Survey schools to determine extent of the use of paraprofessionals, job descriptions, and required background of personnel.

b. Study TEPS recommendations on paraprofessionals.

c. Develop description of most prevalent roles, including specific duties and necessary training.

d. Compare with needs as recommended in the teacher specification model.

e. Develop training program specifications to meet ancillary personnel needs.

f. Evaluation of training program by Coordinating Commission.

g. Use information retrieval to compare these programs with that of the teacher.

h. Refine and further develop the program.

i. Final acceptance of objectives, program, and evaluative procedures by the Coordinating Commission.

Information Retrieval System Development

The information retrieval system component has two responsibilities in the present proposal: (1) to catalogue objectives, procedures, and evaluative techniques of the total program to insure continuity and to provide feedback and cross-analysis of developed specifications; and (2) to recommend procedures within the proposed teacher education system whereby individual student progress can be assessed and records maintained. Procedures for number one have previously been included in other components. Steps for assuring the second role are listed below:

a. Study the objectives and needs of the educational specifications to select or develop an appropriate Information Retrieval Program.

b. Collect and examine data concerning various information retrieval programs for quality cost estimates and evaluations. This will include study of existing programs that are available for adaptation and self-implementation as well as systems available from agencies contracting to provide information retrieval services.

c. Select the system which would best service the desire and needs of this particular model.

d. Analyze, evaluate, and accept information retrieval system by Coordinating Commission.

e. Prepare report on system recommendations with directions and specifications for implementation.

Michigan State University, under the leadership of Dr. John Vinsonhaler, has developed the BIRS information retrieval system, recognized as one of the most versatile systems currently developed. It is proposed that BIRS will form the basic model for implementing the first of the above listed tasks of this aspect of the specifications.

CHAPTER 6: A COMPETENCY BASED, FIELD CENTERED SYSTEMS APPROACH TO ELEMENTARY TEACHER EDUCATION

Northwest Regional Educational Laboratory

Objectives:

The proposal will develop specifications for a competency based, field centered model that will:

1. Define in behavioral terms the professional education curriculum for elementary teachers, including behavioral definition of the skills or competencies needed by elementary teachers to perform specific instructional functions and the knowledge that is prerequisite to them.

2. Provide systematically designed instructional programs or "instructional systems" which permit teachers to master the required competencies.

3. Provide the means where by students of teaching can demonstrate these competencies under supervised laboratory, clinical, and internship conditions. Laboratory conditions are defined in terms of classroom simulation and microteaching procedures; clinical conditions by the student teaching experience; and internship conditions by a two-year, closely supervised residency program. The means provided for developing teacher competencies are equally adaptable at both the pre-service and in-service level.

4. Provide a computer based, information management system which permits students to enter, advance, and exit the program, insofar as possible, at their own pace and on the basis of criterion performance measures. The instructional program is performance based and not time

or course dependent.

5. Specify procedures where by the competencies identified in the program, the instructional systems developed to bring about these competencies, and the means of assessing them are continuously evaluated and updated.

THE COMFIELD MODEL

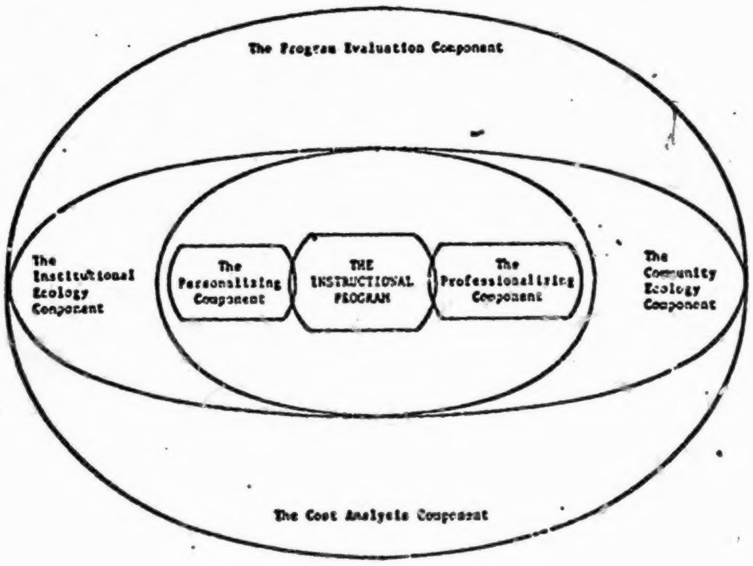
The Program Evaluation Component
The Institutional Ecology Component
The Personalizing Component
THE INSTRUCTIONAL PROGRAM
The Professionalizing Component
The Community Ecology Component
The Cost Analysis Component

Figure 1. A schematic representation of the interaction and exclusiveness of the various elements comprising the proposed ComField model teacher education program

Assumptions:

A. About Teaching:

1. Technology will increasingly supplement but not replace the classroom teacher. Several present functions of the teacher, however, will be performed more effectively by technological advances: exposure to information, assessment of learner characteristics and assessment of learner outcomes.

2. As the science of human development and learning advances and as the knowledge explosion increases, new classes of educational outcomes will receive priority:

a. higher order coutcomes within the cognitive domain, e.g., critical thinking, problem solving and evaluative skills.

b. attitudinal outcomes within the affective domain.

c. interpersonal competencies within the social domain.

Together they will aim toward the development of committed, self-directed, competent learners that can relate meaningfully and effectively with others.

3. As the science and technology of instruction grows, new kinds of educational specialists will evolve:

a. the instructional designer, i.e., the curriculum specialist.

b. the instructional engineer, i.e., the instructional systems development specialist.

c. the instructional manager, i.e., the specialist in managing learning environments.

4. Accelerating cultural change, the information explosion and the rate of technological advancement demand a personal capacity on the part of educational specialists for thoughtful and systematic change.

5. A realistic perception of one's self and one's interpersonal relationships with others is crucial for effective performance of the role of classroom manager.

B. Assumptions about the Education of Teachers:

1. A viable teacher education program must center around predefined performance objectives (behavioral objectives) that lead to the competencies teachers need in order to function effectively in their emerging roles.

2. Instructional systems which have a known degree of reliability in bringing about specified competencies, must be developed for and employed in a teacher education program. Competencies can be assessed at three levels of mastery: (a) knowledge, as measured by identification, recognition, recall, etc., (b) understanding, as measured by extrapolation, analogy, generalization, abstraction, etc., and (c) skill in application, as measured by performance under simulated or real-life conditions.

3. The program must employ an information management system which permits students to enter, advance and exit the program, so far as possible, on the basis of criterion performance measures. This moves away from an instructional program which is time or course bound to a program that is performance based.

4. Such a program must be adaptive to or responsive to individual learner differences. Operationally this means such a program must permit students to move through it at different paces and in different combinations of instructional experiences that fit differences in learning styles and background, and to accommodate different patterns of interest by permitting in-depth experiences in areas of student choice. All students, however, must demonstrate satisfactory performance on an agreed upon minimum set of competencies prior to their certification as competent elementary teachers.

5. Such a program must draw from, relate to, and be accepted by the larger educational community. Toward this end the program should (a) center around continuing, face-to-face experiences on the part of student teachers with elementary school children; (b) involve experienced elementary school teachers and administrator in specifying the competencies to be mastered in the program; (c) provide a pre-service internship experience in the schools in which the student will be working upon completion of teacher training; and (d) provide an in-service, continuing education program for both new and old teachers in the schools in which graduates of the program are placed. The continuing, in-service program also would be competency based and would rely for its management primarily upon specially trained master or clinical teachers within the schools. The relationship of the teacher education program to the college and to the larger educational community is presented schematically in Figure 2.

TEACHER EDUCATION PROGRAM

General Education Professional Foundations	College Centered
Preservice Professional competencies Inservice Professional competencies	Field Centered

Figure 2. The aspects of the teacher education program that are centered in the college and in the field

6. Such a program must also recognize and capitalize upon prospective teachers' capacity for substantial amounts of self-instruction. This can be conceived as helping students learn how to participate more in the planning and management of their own learning and assessment of their own progress. The aim will be to help students become active, continuous learners throughout their lives.

7. The overriding aim of a teacher education program must be the development of teachers who can create specific learning situations meaningful to specific children or groups of children in terms of each child's characteristics and experiences.

8. Throughout the program there must be an effort to help each student understand himself and to bring this understanding to bear upon all of his educational and professional decisions.

Expected Outcomes

Six major outcomes will result from the development and application of the Comfield model program:

1. It will bring to teacher education, and perhaps as an example of all professional education, a degree of specificity and efficiency that teacher education has lacked in the past.

2. It will provide a far reaching synthesis of the present technology available to education.

3. It will provide a far reaching integration of the objectives of education, at both the elementary school level and teacher education level.

4. It will integrate as never before the educational resources of an entire region of the United States.

5. It will initiate change at all levels of education, including State Departments of Education, across an entire region of the United States.

6. It will unite the resources of the federal government, elementary and secondary schools, public and private colleges, and industry in an educational enterprise potentially beneficial to all.

The Instructional Component of the Model

The instructional component of the model consists of: (1) objectives in the form of descriptions of specific teacher competencies to be developed; (2) instructional systems which lead to their development; (3) measurement systems which permit one to assess the level of mastery on each competency attained; and (4) an information management system which permits the guidance and control needed for students to maximize the development of the teaching competencies required for successfully completing the program. (This includes a data storage and retrieval system to retrieve information about the students and the educational experiences available in order to make a more intelligent match between the two.) All elements within the instructional component are interdependent and are linked programmatically across time.

Basic to the instructional program within the Comfield model is the instructional systems design model developed by Crawford in his work at HumRRO and applied widely in military training programs.*

The sequence of these ten steps is illustrated schematically in Figure 3.

Specifying Competencies to be Mastered

Because of the complexity and value laden nature of specifying competencies to be pursued, an essential feature of the Comfield model is a carefully developed procedure for specifying competencies. Central to this procedure is bringing together theoretical and empirical expertise which discipline specialists and professional educators can contribute to the task. Practical, situationally relevant expertise which public school teachers and administrators can bring to the task is also required.

Operationally, the procedure involves:

1. Specification of a tentative list of competencies by discipline and teacher education specialists believed to be needed by teachers. In developing the list specialists will examine both research on and models of teaching. Central to this examination are the major categories of knowledge and skill required of teachers within the classroom. One set, after Ryans, is shown on Table 1. This corresponds to steps 1 and 2 of Figure 3.

2. After broad categories are defined, specialists will analyze the specific tasks to determine terminal objectives and the prerequisite knowledge and skill need to perform them (steps 3, 4, and 5 of Figure 3). A set of 25 objectives is indicated in attachment 6.

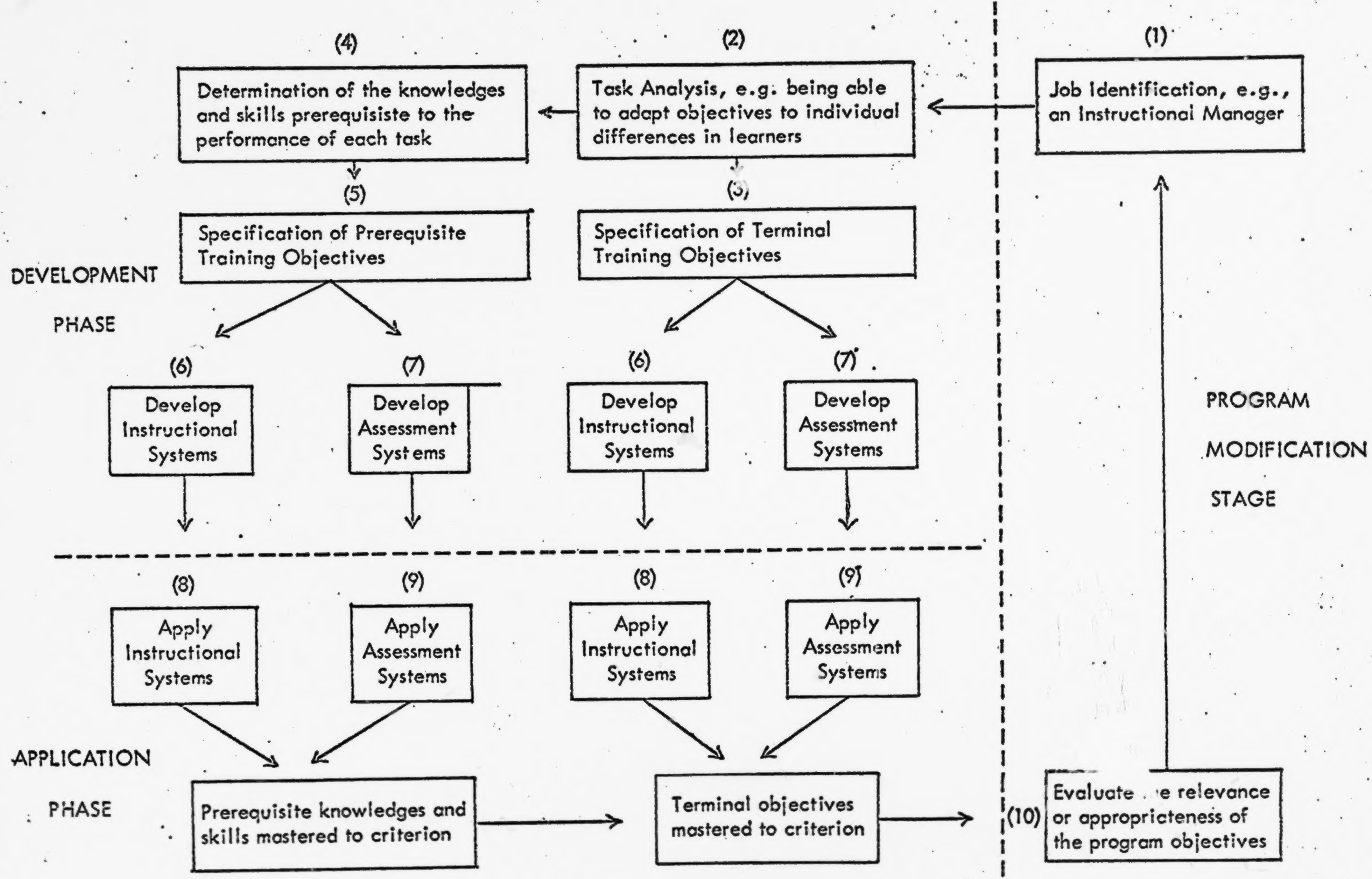
(4)
Determination of the knowledges and skills prerequisiste to the performance of each task
(2)
Task Analysis, e.g. being able to adapt objectives to individual differences in learners
(1)
Job Identification, e.g., an Instructional Manager
(5)
Specification of Prerequisite Training Objectives
(3)
Specification of Terminal Training Objectives
DEVELOPMENT
PHASE
(6)
Develop Instructional Systems
(7)
Develop Assessment Systems
(6)
Develop Instructional Systems
(7)
Develop Assessment Systems
PROGRAM
MODIFICATION
STAGE
(8)
Apply Instructional Systems
(9)
Apply Assessment Systems
(8)
Apply Instructional Systems
(9)
Apply Assessment Systems
APPLICATION
PHASE
Prerequisite knowledges and skills mastered to criterion
Terminal objectives mastered to criterion
(10)
Evaluate the relevance or appropricteness of the program objectives

Fig. 3. A schematic representation of the sequence of steps involved in applying systems analysis procedures to instruction.

TABLE 1

CLASSES OF COMPETENCIES REQUIRED TO PERFORM THE ROLE OF INSTRUCTIONAL MANAGER, ORDERED ACCORDING TO LEVEL OF SPECIALIZATION AND CLASS OF LEARNER OUTCOME

CLASSES OF COMPETENCIES REQUIRED TO PERFORM THE ROLE OF INSTRUCTIONAL MANAGER				FOCUS OF SPECIALISTS					
	Preschool			Preschool			Preschool		
	Cognitive Outcomes	Affective Outcomes	Interpersonal Outcomes	Cognitive Outcomes	Affective Outcomes	Interpersonal Outcomes	Cognitive Outcomes	Affective Outcomes	Interpersonal Outcomes
Assessing Learner Behavior									
Assessing the Appropriateness of Instructional Objectives									
Assessing the Appropriateness of the Instructional Setting									
Selecting an Appropriate Content Response									
Selecting an Appropriate Instructional Strategy									
Selecting an Appropriate Communication Mode									

3. Academic and teacher education specialists will meet with classroom teachers, administrators, and State Education Department representative to "test the validity" of specifications. Results of this dialogue will represent a first approximation to a competency-based program.

4. Decisions must then be reached as to the performance standards at two levels: (a) generalized, situationally independent to be used in the laboratory phase of the program, and (b) situationally specific to be used in the clinical and internship phases. Performance standards will be set by the same procedure as specifying competencies.

A major difference lies in the application of these two sets of standards, however, the generalized standards will be administered by teacher educators within the laboratory program whereas practicing master teachers will administer the situation specific standards in the clinical and internship programs.

Developing Instructional Systems

In a competency based program, instruction is aimed specifically toward the development of specified competencies. The instruction is judged to be effective to the extent it permits the realization of the specified competencies at a given level of performance. Principles of instructional systems engineering need to be adopted to facilitate the instructional process within this context.

The systems approach used many different techniques to accomplish its objectives. In fact, an instructional system is nothing more than a collection of the various elements which make it up, organized in such a way that a set of objectives will be reached with known degree of reliability. By organizing and channeling available resources and techniques to accomplish a common purpose, and by continuously submitting the system to evaluation to see if it in fact produces the purpose for which it is intended, the systems approach becomes a powerful management tool. A major strength of the instructional systems approach is that each instructional program has built into it a provision for review, revision and modification, and thereby correction, if performance from it is below the minimum acceptable level.

It is anticipated that the instructional systems will be sufficiently varied in kind to enable learners who process information best through lecture, discussion, reading, or observation of concrete circumstances to channel their learning experiences accordingly. Throughout the instructional effort, laboratory simulation and micro-teaching procedures will be used extensively. By using such procedures it is possible to bring the development of a given competency under carefully controlled, continuously monitored conditions.

The flow chart in figure 4 illustrates the interaction of behavioral objectives, alternative instructional systems, and alternative assessment systems. Elements of the instructional systems include:

1. A statement and explanation of the desired behavior.

2. A procedure for assessing each learner's entry level in relation to the desired behavior.

3. Alternative sequences of learning activities in which each learner either (a) successively complete behaviors which constitute essential steps leading to the objective; (b) demonstrates an advanced level of entry behavior, and consequently bypasses selected essential steps leading to the objective; (c) demonstrates a deficiency and meets prerequisites to essential steps leading to the objectives.

4. A criterion task in which the learner demonstrates the behavioral objective in terms of a generalized performance standard.

5. A second criterion task in which the learner demonstrates the behavioral objective in terms of situation specific performance standard.

Developing Assessment Systems

Development of assessment systems is closely linked to development of instruction systems.

System related assessment serves three functions:

1. Determination of whether a learner achieves the level of performance that is expected of him, i.e., whether the terminal objectives and their various enabling objectives have been realized..

2. Analysis of an instructional system to determine those aspects of it that are effective and those that are not.

3. Evaluation of the appropriateness of the conceptual framework that underlies the instructional system. This involves the re-analysis of the relevance and ordering of prerequisite objectives in light of analysis mentioned in 2 above. Quality of instructional systems is closely related to the quality of measurement that is associated with them.

SCHEMATIC DRAWING OF TRAINING SYSTEM

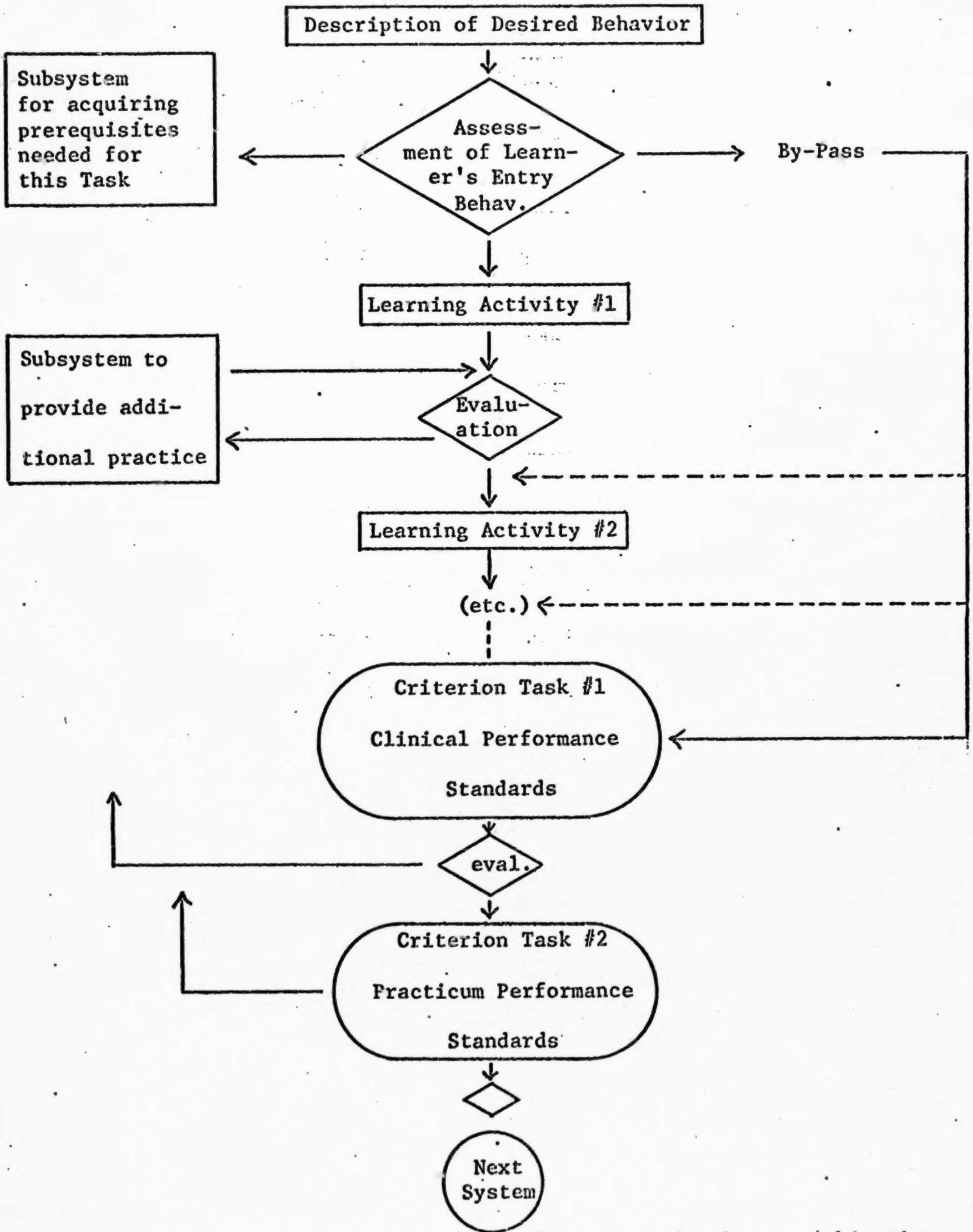
Description of Desired Behavior
Subsystem for acquiring prerequisites needed for this Task
Assessment of Learner's Entry Behav.
By-Pass
Learning Activity #1
Subsystem to provide additional practice
Evaluation
Learning Activity #2
(etc.)
Criterion Task #1
Clinical Performance Standards
eval.
Criterion Task #2
Practicum Performance Standards
Next System

Figure 4. A schematic representation of the interaction between objectives, instructional systems, and assessment procedures in the development of an instructional competence.

Operationally, assessment systems are developed as instructional systems were (see steps 6 and 7 in Figure 3).

Developing a Computer Based Information Management System

The information storage and retrieval demands that accompany an individualized, competency based instructional program, e.g., individualized pacing, placement and selection of instructional experiences, are sufficiently great as to make the development of a computer based system to manage it extremely desirable.

The Organization of the Instructional Component Within The Model Program

The proposed instructional program relates primarily to the professional education phase of a teacher's education, but it builds heavily upon pre-professional experiences. Because of this attention must be directed within the model to the preprofessional as well as the professional phase of the college experience.

Preprofessional Education

During the first two and half years of college or university work, the student of teaching will fulfill most of the institutional requirements for graduation as well as the requirements for a major in a field relevant to elementary teaching. Relevant majors might include a broad area such as child development. This recognizes that institutions differ in what they consider to be "general education," and there is commitment to the idea that these differences whould be encouraged.

Professional Education

Until colleges are so organized that degree programs are relatively independent of time, the professional phase of the undergraduate program probably will continue to constitute approximately one and a half years of the baccalaureate program. This will consist of three phases, each relating to the same development of increasing competence in the same set of basic behavioral objectives:

1. The first or Laboratory phase will involve a set of instructional systems in which the student acquires the knowledge which is prerequisite to teaching subject matter and maintaining classroom organization. Generalized performance standards are applied in the evaluation of laboratory behavior. These systems will require approximately one full academic year and will involve the extended use of classroom simulation and micro-

teaching procedures. Supervision at this level of training will be done by staff of the teacher education program.

Prior to the second and third phases of the professional program, the student will be assigned to a school and a master teacher supervisor. The student will be expected to prepare for this specific situation and to practice within it for a period of two and a half years.

2. The second or Clinical phase of the professional training program will require the student of teaching to demonstrate the competencies gained in the laboratory under live classroom conditions. Generalized performance standards will still be applied in the evaluation of performance behaviors. This phase of the training program will last approximately one half an academic year, corresponding in time to that which traditionally has been devoted to the student teaching experience. It will differ from the traditional student teaching experience, however, in that it will be focused on the practice and demonstration of specific competencies. A master classroom teacher will be the primary agent responsible for the supervision of the clinical experience.

At the completion of the clinical phase of the profession sequence the student will have completed four years of undergraduate education. He will earn a B.A. degree and be certified as a minimumly competent teacher.

3. The third or Modified Internship phase of the professional education program covers a span of one to two years and takes as its focus: (a) help students become able to give minimally acceptable demonstrations of the full set of specified competencies within the context of the classroom and under the conditions of situation specific standards; (b) help students gain the ability to demonstrate growth in ability to apply specified competencies; (c) help student develop a style of teaching that is unique to that individual. It is assumed that each student of teaching will vary in the way in which he demonstrates the desired behavior but that this will be consistent with his own view of himself.

Generally, this period of internship will be spent in the same school with the same type of assignment as that held during clinical training. Also, the student will continue to work with the same master teacher. In some cases it may not be possible to continue in the same school, but final certification will be delayed until evidence of growth in competence can be demonstrated.

During the first three or four months of the modified internship, the beginning teacher will have released time for planning, for self-appraisal, and for study of other models of teaching. Regularly throughout the intern period the developing teacher will be provided feedback in the form of video tapes and evaluations by her supervising teacher in terms of the situation specific standards developed in relation to each competency.

The intern will also extend his capacity to make educational decisions by continued study at the college or university.

Upon receiving assurances from the school that the intern has demonstrated growth in competence and from the college or university that he has demonstrated increased capacity for decision making, the State may award a certificate recognizing Career Teacher status.

Support Components

At least four support systems are required for its effective interface with students. These include:

1. A guidance component which permits optimal fit between instructional program and learner characteristics such as ability, interest, preference, personality, and plans for the future (Personalizing Element).

2. A service component which provides students an opportunity for involvement, status, and shift from a student to a professional identity (Professionalizing Element).

3. A liaison component which fosters and maintains an environment within the institution that is supportive of the program (Institutional Ecology Element).

4. A liaison component which fosters and maintains an environment within the participating schools and communities that is supportive of the program (Community Ecology Element).

Some of the dimensions of the teacher education program that personalize as well as individualize the program are:

1. Individual interpretation of assessment batteries by competent counseling psychologists. The aim is to help each student anticipate and resolve the predictable, idiosyncratic problems he might encounter in student teaching.

2. The availability of a counseling psychologist for individual counseling sessions during the entire program.

3. Group counseling sessions conducted by counseling psychologists.

4. Videotaped sessions of teaching performance with the opportunity to view and analyze the performance with a competent, sensitive person.

5. The selection of specific content from psychology and sociology related to the concerns of beginning teachers.

Instructional systems will be designed for this component although a standard performance criteria for self-understanding, self-motivation, and self-determination will not be set.

Each teacher in training will be cycled continually through the personalized support component from the time he is admitted to the program until he has completed the internship and residence phase of the program. It is anticipated that as a result of the personalizing component, teachers in training will be able to make more intelligent decisions regarding educational prescriptions and the kind of situations in which they will prefer to work.

The Professionalizing Component

Three broad classes of service are planned as a means of involving students actively in the issues of education, giving them status, and initiating the shift from a student to a professional identity.

Involvement in the Development, Operation, and Evaluation of the Comfield Model Program

Since the Comfield program is seen as a continuously evolving, self-correcting program, and as such requires continuous development and evaluation, it is proposed that students in the program be encouraged to take part in these efforts throughout their educational experience.

Involvement in the Dissemination of the Comfield Model Program Within the Educational Community and to the Public At Large

As involvement in the development, operation, and evaluation of the program is anticipated to contribute to the professional identity of students, so too is involvement in telling the rest of the educational community about the program. In this respect, students will be encouraged to join staff in submitting technical papers to be read to professional meetings or published in professional journals; take part in offering seminars, workshops, off campus courses, and participate in the interpretation of the program to the public through PTA, columns in local papers and arranging site visits for interested parent or community groups.

Applying the Knowledge and Skills that have been Acquired as Students of Teaching to Needed Educational Projects and Programs

Early in their educational program, students will be encouraged to look upon themselves as developing professionals and to seek ways in which they can put their expertise to work. Specifically, students will be encouraged to become involved in Park, YMCA, Summer Camp, Drop-Out, Vista, Peace Corps, Head Start, and other educational programs, and to engage in tutorial activities at all levels of education.

The Institutional Ecology Component

To be successful, a teacher education program such as that outlined in the Comfield model must have broadly based institutional support. This is the case not only at the administrative level, but at the faculty and student body level as well. Toward this end, the Comfield program calls for a key staff member to serve as Director of Institutional Ecology. This person will have the task of creating and maintaining an overall institutional environment which is facilitory to the program. Operationally, this requires he maintain close liaison with the administration, departments, the student body, student living groups, etc., interpreting the nature and needs of the program and influencing practices, decisions and attitudes so far as possible to the advantage of the program. In a sense, the person in this position will be a combined public relations man, lobbyist, politician, and professional educator. He also will serve as a primary source of information to those administering the Comfield program as to circumstances occurring across the campus that need to be considered in making program related decisions. As indicated above, student resources will be marshalled whenever appropriate in the pursuit of an institutional environment that is supportive of the program.

The Community Ecology Support Component

Since the model's implementation depends almost entirely upon the involvement and support of the schools, and ultimately upon the educational community at large, it must have broadly-based support from both. Paralleling the approach to gaining institutional support, the model will call for a key staff person to assume primary responsibility for creating and maintaining an overall school and community environment which buttresses the model and its goals.

Four tasks of critical importance fall within the province of the Director of Community Ecology:

1. Obtaining the cooperation of the school districts in the specifications of competencies to be pursued in the program.

2. Arranging with school districts for an intensive inservice training program for teachers who will serve as field supervisors in the internship and residency programs.

3. Making the contractual arrangements with these same districts for students in the internship program.

4. Making the contractual arrangements for students in the residency program.

Managerial and Evaluation Components

Developing model specifications for the teacher education program proposed here is an essential preliminary step. Getting it into operation will confront administrators and staff members with needs for enlisting the support of the faculty members who will be considered in implementation. Recognizing such "facts of life" in advance will help in preparations for implementation. The three components outlined below represent steps in this direction.

1. Administering the Program. Implementation of a generalized or "model" teacher education program requires consideration of the differing administrative structures of colleges and universities involved.

2. Cost Accounting the Program. Because the model teacher education program represents a radical departure from traditional programs and contains in it many new relatively costly elements and because the cost of teacher education like all other education is a critical matter, the model has built into it a component for obtaining data on its developmental and operational costs. Cost analyses will be run on each of the components of the program and the program as a whole, with a view toward finding not only the most economically feasible approach to operation of such a program but also the total costs of such a program. This is to insure that informal judgments about relative costs of such a program can be made. Cost accountants working with operations research analysts

will be employed to obtain necessary data.

3. Evaluating the Program. The program evaluation component of this model has three functions: (1) the continuous assessment of the operation of the program and each of its various parts; (2) the continuous assessment of the influence or impact of the program; and (3) the continuous assessment of the program in terms of needed change in direction or emphasis. As such the program evaluation component is separate and apart from the evaluation needed to determine the effectiveness of the various instructional systems in bringing about their intended outcomes or the assessment of individual students to see if they have acquired competencies specified in the program. These latter two assessment tasks are part of the instructuional component rather than the program evaluation component. The primary assumption underlying the model program is that it needs to be self corrective and continuously responsive to the need for change, and as such, it needs continuous, empirically based evaluation.

Assessment of program operation

The function of this aspect of evaluative effort is to determine degrees to which the program is doing what it is supposed to do. Traditionally, this kind of effort has been concerned only with program effectiveness. The present effort is also concerned with program impact. This requires information about the side effects of the program on students and staff, the institution and the schools associated with the program. This orientation to evaluation rests upon the assumption that the pursuit of any educational program has wide consequences for those associated with it, and in order to judge whether a program should be continued evidence regarding its full range of consequences must be available. The impact model to be used in this evaluation will be an adaptation of the model being developed by Teaching Research as a guide to National Evaluation Studies of Instructional Materials and Systems.

Monitoring the Program for Directional Change

The function of this aspect of the evaluative effort is to assess constantly whether the program is current and appropriate in its focus. This requires the continuous monitoring of educational theory and practice and the contribution of disciplines relating to them. It also requires the continuous monitoring of the appropriateness of the competencies that have been specified as central to the program. Two kinds of information are critical in this respect: (1) judgmental evidence from both practicioners and theoreticians, and (2) empirical evidence as to the contribution of the various competencies in bringing about desired learning outcomes in children. The latter of course, requires a huge research investment but without it the program can never rest upon more than the best of possible "educated guesses." Toward this end the program must be linked to a basic instructional research program which centers on the relationship between competence training, instructional practices and learner outcomes.

Specifications to be developed:

1. Instructional systems for classroom management, personal and professional competencies.
    - a. Define the competencies.
    - b. Develop specifications for systems which will enable trainees to demonstrate classroom management competencies under clinical or laboratory conditions.
    - c. Develop specifications for learning systems in the personal and professional identity components.
    - d. Develop specifications of learning systems for acquisition of the knowledge which is prerequisite to teaching elementary school pupils.
    - e. Develop specifications of appraisal techniques for judging teaching behaviors under field conditions.
    - f. Develop specifications for a program of inservice education.
2. Management systems for program operation in colleges and communities.
    - a. Define dimensions of the management systems in terms of staff requirements, facilities, administration, inservice and time lines.
    - b. Develop specifications for the management systems.
    - c. Develop specifications for initiating the management systems.
    - d. Develop specifications for maintaining the management systems.
3. Develop evaluation and cost accounting systems for program operation in colleges and communities.
    - a. Define dimensions of evaluation and cost accounting systems.
    - b. Develop specifications for the evaluation and cost accounting systems.

ORGANIZATIONAL PLAN FOR DEVELOPMENT OF MODEL SPECIFICATIONS

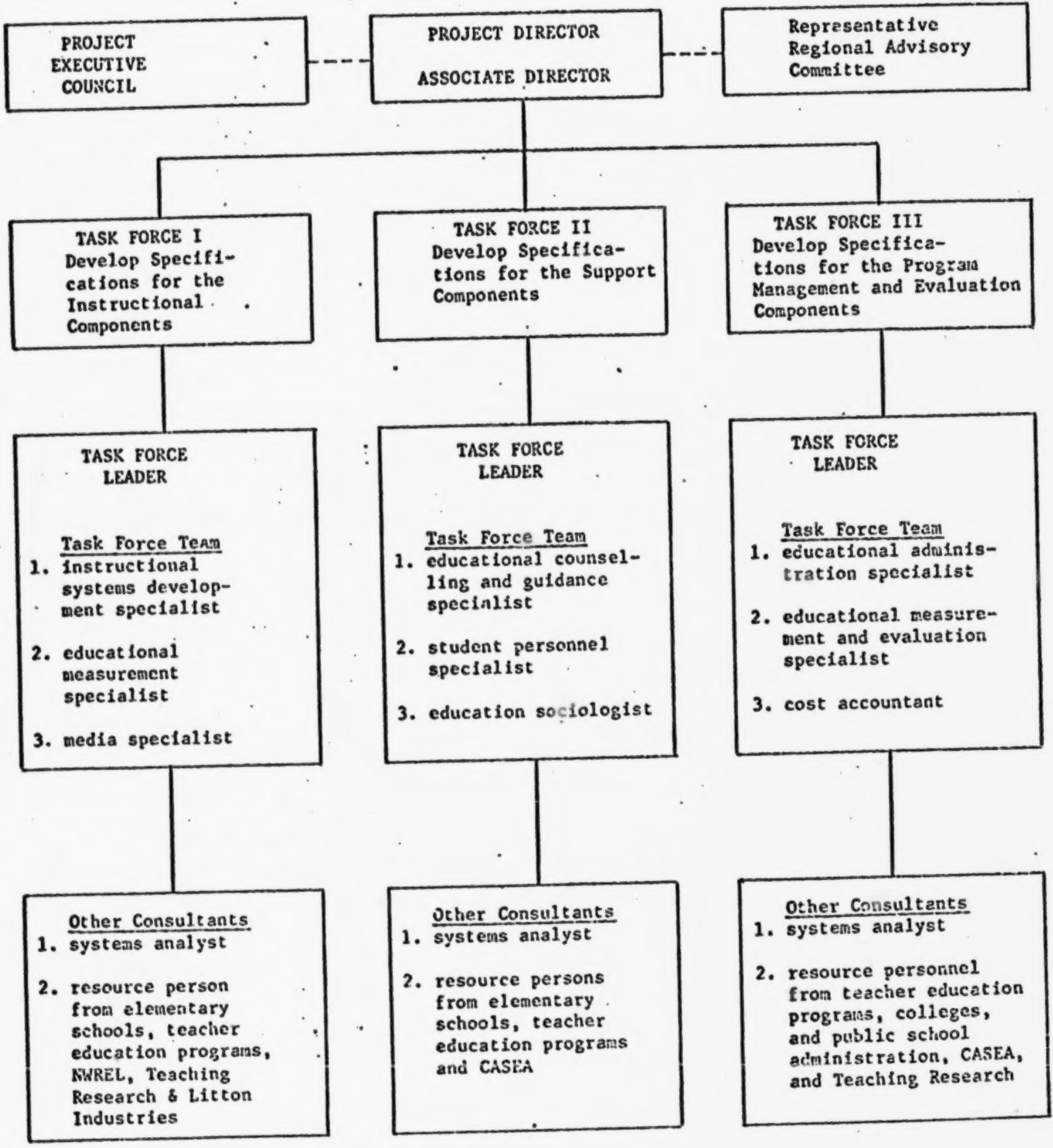
PROJECT EXECUTIVE COUNCIL
PROJECT DIRECTOR
ASSOCIATE DIRECTOR
Representative Regional Advisory Committee
TASK FORCE I
Develop Specifications for the Instructional Components
TASK FORCE II
Develop Specifications for the Support Components
TASK FORCE III
Develop Specifications for the Program Management and Evaluation Components
TASK FORCE LEADER
Task Force Team
1. instructional systems development specialist
2. educational measurement specialist
3. media specialist
TASK FORCE LEADER
Task Force Team
1. educational counselling and guidance specialist
2. student personnel specialist
3. education sociologist
TASK FORCE LEADER
Task Force Team
1. educational administration specialist
2. educational measurement and evaluation specialist
3. cost accountant
Other Consultants
1. systems analyst
2. resource person from elementary schools, teacher education programs, NWREL, Teaching Research & Litton Industries
Other Consultants
1. systems analyst
2. resource persons from elementary schools, teacher education programs and CASEA
Other Consultants
1. systems analyst
2. resource personnel from teacher education programs, colleges, and public school administration, CASEA, and Teaching Research

Figure 6. This figure details procedures to be used in development of the ComField model.

CHAPTER 7: A PROPOSAL TO DEVELOP EDUCATIONAL SPECIFICATION FOR A COMPREHENSIVE TEACHER EDUCATION PROGRAM

Consortium of State Universities of Ohio
(through the University of Toledo Research
Foundation)

The project will develop model programs containing specifications for the preparation of both pre-service and in-service teachers. Specifications also will include provision for necessary experiences for college and university personnel who will be instructing these groups, and for administrators and supportive personnel (including paraprofessionals and teacher aides) who will be counselors with these groups.

The final model will include specification for a comprehensive teacher education program defined operationally and behaviorally. This concept requires that all elements of the educational system be given appropriate and adequate treatment. Both new and retrained teacher's needs will be considered.

In the Review of Literature, it is indicated that large grants for teacher education were given for program development but not for theory development or research. Many well funded projects which were called "experimental" turned out to be demonstrations with loosely structured evaluations of the program consequences. Much of the research literature still reveals a lack of theory. Teacher education is still fragmented and detached.

The conceptual framework is used to borrow much from Tyler's approach to curriculum building. This supplied the framework to guide the planning. A steering committee provides expertise from all of the necessary disciplines and special areas of the educational system.

Existing programs of teacher preparation were designed for a time before atomic energy, the Cold War, the population explosion, the overwhelming increase in knowledge, new social upheavals, the development of new technology. A change has occurred in instructional material, organization, administration, and in practically every component that can be identified.

Generally speaking, teacher education has not kept pace with the requirements of preparing teachers for today's elementary schools. There has never been a formal procedure for relating what happened inside and outside the teacher's classroom to college and university teacher education programs. The dissemination of research findings from the university to the classroom has been, for all practical purposes, an unexamined process. For these and other reasons, it is necessary to plan a comprehensive program of teacher education which is relevant to existing conditions, and which utilizes the best available knowledge in all aspects of subject matter content, teaching techniques, and the learning process.

It is not enough to say that teacher education has not kept pace with the requirements of preparing teachers for today's elementary schools. The gap between present day requirements and existing teacher education programs has increased rather than decreased. Research and development centers attract persons with unique talents to explore new dimensions of learning and applications of technology. The network of regional educational laboratories concentrates on programs designed to bridge the gap between research and practice. However, the key personnel required to institutionalize the needed changes--teachers and administrators --are prepared without any particular reference to these advances. Future preparation of elementary school teachers must reflect current change and development.

Problem

The problem of this project is to furnish a set of detailed educational specifications for the various components of model elementary teacher education programs.

1. The program of teacher education to be designed will incorporate the concepts of research and instruction units which have been developed by the University of Wisconsin Research and Development

Center.[*] This elementary school model differs from the usual elementary graded school and its self-contained classroom. This requires a coordinated design for preservice and inservice components of a continuing teacher education program.

2. Eschewing localism--indicates the possibility of looking beyond ourselves and our assumptions about the education of elementary teachers to the teacher education objectives, patterns, and products of parallel programs in other countries.[⁑]

Procedures

An Overview: The overall strategy can best be comprehended by an examination of Figure 1, the schematic representation of a time schedule for three stages of a total project. Figure 1, although not drawn to proportion reveals the necessary project sequence: to plan for designing a program, to design the program, and to apply the program. Because there are a myriad to activities involved some dependent upon others, there are unusual problems in regard to the timing of separate events. The several tasks involved during the three stages of the project will be coordianted by a management technique called PERT.

STAGE I			STAGE II	
Proposals invited	Establish steering committee. Establish writing committee. Write proposal.	Proposal due in USOE	Proposals selected and funded by USOE	Develop specifications for model teacher education programs
October 16, 1967		January 1, 1968	March 1, 1968	October 31, 1968

Figure 1. Schematic Representation of Project Stages

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[*] H. J. Klausmeier and D. M. Cook, *Project Models: A Facilitative Environment for Increasing Efficiency of Pupil Learning and for Conducting Educational Research and Development*, Working Paper No. 5, 1967.

[⁑] G. E. Dickson, "International Teacher Education Research: The New Frame of Reference for Teacher Education Reform," *The Journal of Teacher Education* 18:277-284, Fall 1967.

Stage I:

The formation of a steering committee. Members were selected according to the needs suggested by an application of Ralph Tyler's rationale for developing a curriculum.* Each member of the steering committee is a recognized authority in his field.

Convened a unique cooperative consortium of public higher education institutions in Ohio which have programs of teacher education.

Established a consultant relationship with the Wisconsin R & D Center.

Informed and invited MOREL (regional laboratory) to assume a role in the creation and implementation of the design.

Negotiated for time and services of consultants and educational services and products.

Stage II:

This stage will apply all of the necessary talent and resources to the task of designing educational specifications for a program of teacher education. The progression from goals of public education to specifications of a program to prepare teachers for the program will be a logical expansion from the most general goals to the most particular specifications. This progression will be guided by theory and supported by available research findings at each stage. The continued involvement of the steering committee is essential. The principal product of Stage II will be a complete range of detailed educational specifications prescribing exactly what behaviors are required and what materials, personnel, and experiences are required for the attainment of each specification.

Elements Involved in Developing Educational Specifications:

The process of arriving at specifications is done twice. Once to identify the elements involved and then to show by example how one aspect of a goal might be traced to the point of implementation as a behavioral specification. Each section of Figure 2 is separately dealt with

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*See Ralph W. Tyler, Basic Principles of Curriculum and Instruction, Chicago: University of Chicago Press, 1950.

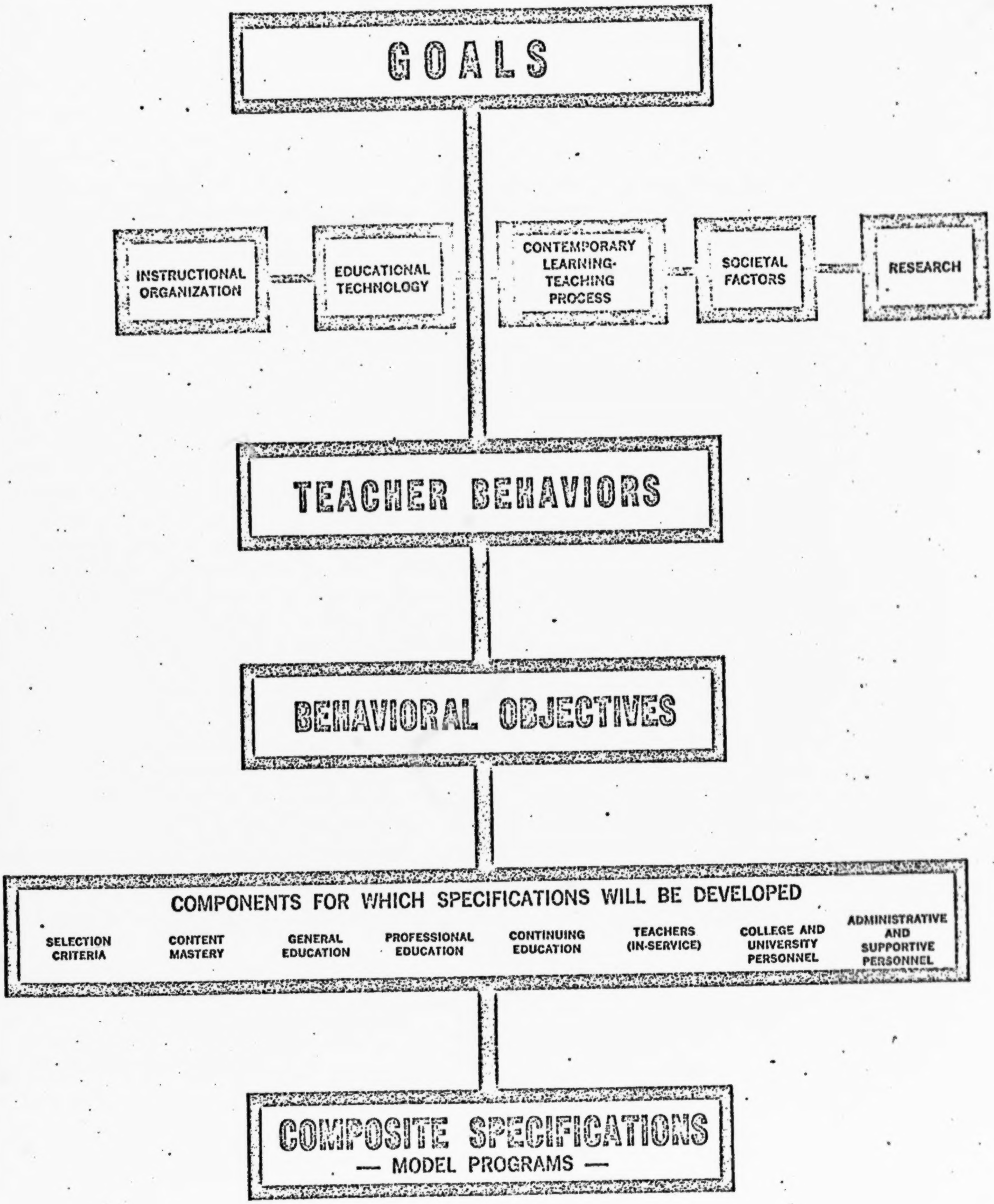
GOALS
INSTRUCTIONAL ORGANIZATION
EDUCATIONAL TECHNOLOGY
CONTEMPORARY LEARNING-TEACHING PROCESS
SOCIETAL FACTORS
RESEARCH
TEACHER BEHAVIORS
BEHAVIORAL OBJECTIVES
COMPONENTS FOR WHICH SPECIFICATIONS WILL BE DEVELOPED
SELECTION CRITERIA
CONTENT MASTERY
GENERAL EDUCATION
PROFESSIONAL EDUCATION
CONTINUING EDUCATION
TEACHERS (IN-SERVICE)
COLLEGE AND UNIVERSITY PERSONNEL
ADMINISTRATIVE AND SUPPORTIVE PERSONNEL
COMPOSITE SPECIFICATIONS
— MODEL PROGRAMS —

Figure 2. A conceptual design for developing specifications.

separately dealt with beginning with "Goals." The first line begins with a set of goals and a consideration of these goals in the context of five components. The second line leads to the identification of teacher behaviors which in turn results in the behavioral objectives given in line 3. The fourth line considers the components for which specifications will be developed. Thus, every level in Figure 2, except the second, represents outcomes at various points in the process for developing specifications, with each outcome dependent upon the preceding ones. The five components of the second level identify the context in which the proposers consider the goals in moving to teacher behaviors. Each of the factors identified in Figure 2 is now considered.

Goals:

There have been many attempts to establish educational goals most of which have reflected the social and psychological concepts dominant at the time they were written. Some of these lists of goals such as the Seven Cardinal Principles,[*] the Educational Policies Commission Classification,[*] or the Mid-Century Committee on Outcomes in Elementary Education[**] are still appropriate and could almost have been chosen as the goals for this program. However, the writers were curious to ascertain what goals of elementary teacher education might be revealed from a survey of pre-service and in-service objectives of teacher education as compiled from university catalogues and reports of in-service activities. A random sample of catalogues from forty-four large universities and twelve reports of in-service education were used. The findings were disappointing in that the objectives from both sources clustered around general statements indicating concern for professional education, broad liberal studies, educational leadership, and psychological factors (learning process, knowledge of learner, etc.) which, while broadly relevant, did not clearly indicate any considerable degree of thought and refinement in terms of comprehensive goals for teacher education. They were definitely not appropriate for a program which envisions an evaluation of goals in behavioral terms.

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[*] Developed in 1918 by the Commission on Reorganization of Secondary Education of the National Education Association.

[*] Developed in 1938 by the Educational Policies Commission of the National Education Association.

[**] Nolan C. Kearney, Elementary School Objectives, New York: Russell Sage Foundation, 1953.

The goals which have been tentatively selected are adopted from a list which was developed by the Committee on Quality Education, State Department of Education, Harrisburg, Pennsylvania.* There are better ways of arriving at a set of goals for American public education. It would be ideal to attain goals after a careful study of the society, the learners, and the recommendations of the content specialists. These goals could then be screened through a framework to be sure that they were in conformity with the humanitarian emphases of democracy and also to be sure that their attainment was a reasonable learning task according to the latest information about child growth and development. This appealing procedure was denied by constraints of time, finance, and limited personnel.

The goals selected on an *a priori* basis will, however, be submitted to the Steering Committee for study and possible revision.

While the following statement of educational goals is, in fact, broadly defined, it shall be the purpose of the project staff, along with the Steering Committee, to develop behavioral objectives by which the goals can be attained. This will be accomplished during Stage II of this program.

The goals for the teacher education program reflect the problems which society faces in the world of today and tomorrow. They also suggest definite kinds of teacher performances which can be observed and measured in behavioral terms to determine the teacher's progress toward each goal.

At the conclusion of the proposed teacher education program each teacher should be prepared to employ teacher behaviors which will help every child: (1) acquire the greatest possible understanding of himself

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*The Committee on Quality Education was made up of members of the Pennsylvania State Board of Education who contracted the project to the Educational Testing Service. Experts in the behavioral sciences from all over the country constituted a Standing Advisory Committee for the project. A three volume report entitled *A Plan for Evaluating the Quality of Educational Programs in Pennsylvania,* Educational Testing Service, Princeton, New Jersey, 1965, describes how the goals were evaluated.

The statement of the goals has been altered slightly for our purposes but the rationale for each goal is taken verbatim from a document, entitled HIGHLIGHTS of a report from Educational Testing Service to the State Board of Education of the Commonwealth of Pennsylvania. Princeton, N. J., Educational Testing Service, June 30, 1965, pp. 10-13.

and an appreciation of his worthiness as a member of society, (2) understanding and appreciation of persons belonging to social, cultural, and ethnic groups different from his own, (3) acquire to the fullest extent possible for him mastery of the basic skills in the use of words and numbers, (4) acquire a positive attitude toward school and toward the learning process, (5) acquire the habits and attitudes associated with responsible citizenship, (6) acquire good health habits and an understanding of the conditions necessary for the maintenance of physical and emotional well-being, (7) to have the opportunity and encouragement to be creative in one or more fields of endeavor, (8) understand the opportunities open to him for preparing himself for a productive life and should enable him to take full advantage of these opportunities, (9) to understand and appreciate as much as he can of human achievement in the natural sciences, the humanities, and the arts, (10) to prepare for a world of rapid change and unforseeable demands in which continuing education throughout his adult life should be a normal expectation.

Context:

To provide a context in which to move from goals to teacher behaviors, five primary factors were identified. These are listed in the second line of Figure 2.

Context: Instructional Organization:

Although we might conclude that the most educationally effective teaching situation would be a tutorial situation, this solution is hardly compatible in terms of the financial and human resources of the teaching profession. In order to capitalize on the efficient use of teachers in terms of their backgrounds , numbers of students, subject area specialization and the like, many instructional organizations that go under the umbrella of team teaching have been attempted and implemented.

An instructional organization that has many of the features of team teaching, along with considerable background research and development, is the research and instruction (R & I) unit. The R & I units were developed and tested through the efforts of personnel at the Research and Development Center at the University of Wisconsin. An R & I unit is a unique organization of student teachers, principal, and other personnel within a school building. Teachers and other personnel of an R & I unit are organized on a team teaching basis, with each individual having specific roles and responsibilities in the operation of the unit. A primary objective of an R & I unit is to develop an exemplary instructional program. The organization of the R & I unit provides for the continuous improvement of this program through research, development and innovation. Another important objective of the R & I unit is to provide an environment which is conducive to research and development activities of teachers in the unit as well as personnel from the central staff of the system, the central staff of the building and individuals from universities or agencies such as a regional educational laboratory. Because of its flexibility of instruction, the R & I unit is specially suited for providing individualized personal instruction for the students of the R & I unit.

The type of instructional organization to be used has marked implications for the preparation of future teachers. Therefore it is necessary to decide what type of instructional organization we are going to employ at the outset. The R & I units instructional organization has not only been developed on an _a priori_ basis, but has been shown empirically to be an effective and efficient way of providing the instruction in today's elementary schools.*

Context: Educational Technology:

Any number of devices or systems both of the hardware and software varieties, could be discussed to illustrate the importance of educational technology as part of the context in which we develop teacher behaviors.

Perhaps the most efficient use of audio-visual hardware and software is to be found in the "media center" technique. The general elements of such centers include (a) working and training area for the preparation of materials, (b) a graphics section for the production of specific curriculum needs, (c) a recording facility used to add auditory cues to visual materials produced in the graphics section, (d) a materials distribution section, (e) an equipment maintenance section, and (f) an administrative section for necessary direction and record keeping.* Such a center not only functions as an aid to faculty presentation, it also allows students to become acquainted with the learning center concept used widely in the public schools.

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*Research evidence has been compiled indicating the effectiveness of R & I units organization in terms of instruction, research, and innovation. See Herbert J. Klausmeier and Mary R. Quilling, "An Alternative to Self-Contained, Age-Graded Classes," (Mimeographed research report on research done pursuant to a contract with U.S.O.E. Cooperative Research Program Center, No. C-03/Contract OE5-10-154) 15 pp.

*—Dan Echols, "The Making of a Media Center," _Audio-Visual Instruction_, XII, October, 1967.

Programmed learning can be a valuable aid in supplementing instruction and fulfilling enrichment and remedial objectives. As new materials are developed, the teacher will have to be provided with an understanding of how they apply to the problems of teaching and learning experiences. It must be remembered, however, that programmed instruction is a commitment on the part of teachers and all educators to enhance the learning process. In the final analysis, the educator must decide the appropriateness of the material.

Another area of programmed instruction is that of simulation and gaming. The range is from the much publicized games used in Nova High School in their "Olympic Games" to "Didactic Games" in which future teachers are provided practice in dealing with problems that might occur in their future.

The last area of educational technology is computer assisted instruction--CAI. Originally, the computer was used to simulate teaching machines, but later it was found to contribute to the teaching process. For education, the computer should have dramatic consequence. Computers can now assist students to solve problems and locate up-to-date information. Computer-based teaching devices, programmed and operated by teachers thoroughly trained in electronic data processing techniques, may instruct the students of tomorrow's schools at their own rates. Mass education will not be a paradox to individual instruction.

Context: Contemporary Learning-Teaching Process

There is considerable discussion and controversy in the contemporary educational literature about learning theories, the teaching process, and the relationships between theories of teaching and theories of learning on both the conceptual and operational levels. Scandura* presents a case for theories of teaching being at least to some extent independent of theories of learning. Ausubel*- in essence takes a different position on this matter.

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*J. M. Scandura, "Teaching-Technology or Theory," American Educational Research Journal 3:139-146, March, 1966.

*-D. P. Ausubel, "A Cognitive-Structure Theory of School Learning," Instruction: Some Contemporary Viewpoints, San Francisco, Chandler Publishing Co., 1967, pp. 207-257 (Laurence Siegel, ed.)

The point in this proposal is not to review the various positions but to recognize the importance of this component in developing the specifications for a teacher education program.

The R & I units type of instructional organization is flexible relative to the actual process taking place in the classroom. Therefore, the instructional organization will not dictate the position taken relative to learning and teaching. Similarly, the new technology may have definite implications for classroom activities, but the new technology will be involved regardless of the theoretical construct. While developing the specifications it may not be necessary to take a position on the relationship between theories of learning and teaching. Nevertheless, it will be necessary to consider the context of the contemporary learning-teaching process both in terms of theoretical and tangible factors that make up this process. Such factors have definite implications for the training of the teacher involved in the present and future schools of our society.

Context: Societal Factors

The goals of the public schools are subject to the constant pressure of the social and cultural forces of the society which support the schools. There is no mechanism which mediates between the two systems to insure that changes in one system are reflected by a corresponding adjustment in the other system. Mort and Cornell, in a series of studies, found a time lag of 50 years between the invention of a new tactic or material and its widespread adoption by schools.* Indications are that, under favorable conditions, this time lag is quite different now, perhaps as brief as five years.*

Even though the time lag is lessening, it is necessary to attend now to certain important social and cultural factors which seem, because of their urgency, to merit special attention.

Context: Research

Research is viewed in this proposal as an important part of the context in which we move from goals to teacher behaviors and ultimately to the specifications. Just as societal factors, educational technology and other factors are relevant to this context, so is research, both through the use of past findings and the role of research in teacher education programs.

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*See especially, Paul R. Mort and F. G. Cornell, American Schools in Transition, New York: Bureau of Publications, Teachers College, Columbia University, 1941.

*See Matthew B. Miles (ed.), Innovation in Education, New York: Bureau of Publications, Teachers College, Columbia University, 1964, pp. 6-8.

Teacher Behaviors

Teachers who complete the teacher education program based on the specifications to be developed will be expected to exhibit teaching behaviors which will facilitate the attainment of the goals described above. This demands that the participants become familiar with the specific skills involved in the teaching act. Further, they must become skillful in assessing and evaluating their teaching behaviors so that necessary changes can be made. In specific terms, what a teacher does as he performs his tasks must be determined before the knowledge and experience needed in developing these teaching skills can be ascertained.

LaGrone* classifies the behaviors into the following twelve categories each of which can be broken into numerous specific teacher behaviors.

Behavioral Objectives

In order to determine whether the goals of the teacher education program have been met, it will be necessary to state the goals in terms of behavioral objectives--the performance by which you judge when the student has attained the goals. The writing of behavioral objectives is a task sometimes neglected by educators, but it is a critical step if the goals are to become observable and measurable.

Mager* suggests that three questions must be asked before behavioral objectives are written:

1. What will the student (teacher) be doing when he is demonstrating proficiency?

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*H. F. LaGrone, A Proposal for the Revision of a Pre-Service Professional Component of a Program of Teacher Education, Washington, D.C., American Association of Colleges for Teacher Education, 1964.

*R. F. Mager, Preparing Instructional Objectives, San Francisco: Fearon Publishers, 1962.

2. Under what conditions will this behavior occur?

3. What is the level of acceptable performance?

The writing of the behavioral objectives for this program will be carried out by EVCO during Stage II of the project. An example of behavioral objectives and desirable teacher behaviors necessary for the attainment of one of the goals is included later in this proposal.

Components for which Specification will be Developed:

Components for which specifications will be developed are indicated in the next to last line of Figure 2.

Behavioral Specifications:

The product of the entire process carried forth during Stage II of the project will be a number--a very large number--of educational specifications. These will be prepared much as specifications prepared by an architect for a structure. Specifications will include a statement of: Specific Objective, Materials and Time Required, Treatment, Evaluation.

The specifications will be prepared in sufficient detail to permit the implementation of the program by institutions anywhere.

An Educational Specification Example:

An educational specification example designed to explain how goals will be translated into behavioral specification is given in detail on the last few pages of the proposal under the headings; goals, teacher behaviors necessary to attain goal, and behavioral objectives for goal.

Professional Education Component of Specifications

An example of the professional education component of specifications concludes the proposal. This example is discussed under the headings: behavioral objective, materials and time necessary, treatment and evaluation.

CHAPTER 8: EDUCATIONAL SPECIFICATIONS FOR A COMPREHENSIVE UNDERGRADUATE AND INSERVICE TEACHER EDUCATION PROGRAM FOR ELEMENTARY TEACHERS

University of Pittsburgh

The proposal presents four major concepts that the University of Pittsburgh has: (1) a design team capable of developing a teacher educational program organically related to the great reform movements in education today, (2) access to research and idea input to build the model, (3) the urban environment and cooperative public school linkages that insure a relevant situation in which to test the model, and (4) a view of the task as one of presenting a model which effectively closes the gap between research and practice feasibly for application.

The design team would start with the assumption that an elementary teacher education program must go beyond the formulation of university courses, their content, and teaching strategies, and begin with a comprehensive outline of the parameter of the new dimensions of teacher education and the problems of America's schools within that parameter.

Examples of the problems are the rejection of schools and schooling by hundreds of thousands of disadvantaged children, high pupil-teacher ratios, suburban isolation, and teacher dropout. Examples of the expanding parameters of teacher education are trends toward individualized instruction, computer based instruction; a general impacting of technology, and utilization of several modes of inquiry.

The problem and parametric data is concerned both with elementary school curriculum and teacher education curriculum, and becomes the rationale and objectives for an elementary education program for the 1980's. It is also the criteria against which the eventual model is compared.

The design team will concentrate on behaviorally oriented programs, individualization procedures, materials, and technological media such as:

1. Learning Research and Development Center's Individually Prescribed Instruction (I. P. I.), curriculum at Oakleaf and McAnnulty Schools, and the Primary Education Project (P. E. P.) at Frick School, both elementary school curriculum projects.

2. Falk School's individualized instruction, individualized study programs, and highly differentiated small group study.

3. Other nationally -known individualization procedures, such as O. K. Moore's Responsive Environments.

4. Other individualized models such as Pittsburgh's computer based instruction (PLAN) and primary cycle plans.

This focus serves to emphasize, tutorial approaches to curriculum, e. g., for example, (a) content for courses in individualized instruction, behavioral testing procedures, and modern elementary curriculum, as example, and (b) to highlight technology and procedures for individualizing the teacher education program itself.

Emphasis on individualization is not emphasis on dehumanization. Indeed, teachers in the University's Primary Education Project, PEP, are effective enough in developing primary children cognitively that they spend two staff afternoons per month discussing individual children's protocols, and charting emotional development and new directions in reading, linguistics, social studies programs, and others not necessarily sequenced or individualized.

The design team will shift focus from the community and research inputs and next concentrate on designing a teacher and teacher aide education program. An interdisciplinary, individualized academic and teacher education program will be logically created with a focus on understandings, materials, and contained teaching behaviors that implement the new curricula for children. Focus will be on standards of excellence possible in individualized course work, understanding methods of inquiry, and the clinical testing of behaviors and hypotheses of instruction. Other team training approaches may be suggested that reach beyond the child's mind into the non-school environment, such as counseling or community education teams, searching for new ways to intervene in non-school environments. These environments must be influenced and redirected if education patterns are to be effective.

Since teachers cannot function effectively without informed and effective leaders, the program design team would extrapolate appropriate ideas from the basic teacher education model, and design a program for teachers and administrators, especially in the fundamentals of individualized instruction. The basic teacher education design will provide in-service education for today's teachers as well as pre-service education for tomorrow's teachers, essentially to provide integrated and articulated programs of individualized instruction. In addition, clinical experiences for pre-service teachers must be conducted in association with cooperating teachers and intern supervisors who exemplify a knowledge of individualized instruction.

Teacher Education Parameter Component

Where does one start with the creation of a model for teacher preparation? Not with a definition of a perfect teacher or a regrouping of old courses, but with an examination of the environments in which teacher must function. To clarify the need for new models with new behavior sets, necessitating new courses and new behavioral referents.. It is beginning to look as if the time of the general practitioner is past. We are not advocating in that statement that there should be subject matter specialists as much as a differentiated approach to teacher preparation that begins with general studies of human behavior and ends with a focus upon and about learning early childhood education, for example, with appropriate sociometric packages and behavior sets. We are suggesting that a design team that studies teachers, children, and schools in the community will see incredible differences and see the need to develop different teaching models for different environmental situations.

The design team holds a comprehensive view of American society and its needs. Members must review, however, their grasp of environmental variables, as much to locate a situation in which to test their model as to gain greater understanding. These variables and problems center around confused educational objectives: non-school environmental factors, such as segregation, slum housing, malnutrition, and immorality that damage children's concepts and capacities; teacher behavior that seems to add to that damage; and programs in elementary education that are not relevant in content or process to that damage. Such variables must be assessed to give perspective and to help the team set the goals for the ways that individualization procedures can be utilized.

Agency Component

The Learning Research and Development Center, with its Individually Prescribed Instruction, and Primary Education Projects, is well into the development of a task oriented elementary curriculum in reading, mathematics, and science. There are at least six basic modes of individualizing instruction:

1. Vary the learning goals from student to student (different tasks, or different objectives within a task).
2. Vary learning materials and equipment used from student to student.
3. Vary the learning setting from student to student.
4. Vary the instructional methods from student to student.
5. Vary the teachers from student to student.
6. Vary the rate of advancement from student to student (usually called nongrading).

The design team, earlier admitting the variety of definitions, and making provision for coverage, will lean heaviest on the task analysis systems developed and in development at the LRDC. Individualized instruction is one of the greatest of the new themes, and the design team will rely heavily on the implications of the Center's progress in material development, testing procedures, and task analysis. The design team will also rely heavily on the Center's potential for computer assistance in the management of further program development.

Alliance with the Center will help the design team produce a teacher education design with new curriculum and behaviors, rather than a design that continues to merely furnish bodies to school systems deep in urban trouble. A listing of competencies the new bodies will have to include:

1. Specifying the objectives of the learning task in terms of student behaviors.
2. Selecting or devising instruments and procedures to measure attainment of objectives.
3. Pretesting to determine what objectives the student already has mastered.
4. Diagnosing each student's characteristics as a learner in relation to the task.

5. Prescribing for each student learning activities for his mastering the task.

6. Selecting learning materials and equipment the students will require.

7. Programming oneself as teacher to guide the students in terms of their prescriptions.

8. Conducting the instruction with individualization, revising prescriptions as needed.

The new model necessitates a communication system model through which the new curriculum and research data will evolve and is processed to both pre-service and in-service teachers. The communication model must begin in internship in this clinical fashion.

PARADIGM OF A COMMUNICATION NETWORK

Clinical Cycle Through Researchers - Instructors - Constultants - Interns

R & D and Other Agencies Data Analysis		School of Education Data Processing		School Environment Data Testing and Gathering
	*1		*2	

The points are crucial and this proposal suggests that the mechanical linkage, to insure a constant flow of data, and to keep the Learning Research and Development Center and other agenciespure but linked should be a program of Internship. Data at point * 1 of the paradigm are largely concerned with task analysis research and innovation in materials, and is processed through consultants to interns. Consultants must hold joint appointments with public schools and schools of Education. Data at point * 2 of the paradigm are largely behavioral and is processed through consultants, and University personnel who supervise the consultants. Emphasis on the two major issues of curriculum and teaching behavior through consultants suggests new partnership potential. The size of the communications system is regulated and determined by the agency, college, or university, and school system involved.

New programs are available to furnish ideas and behaviorally oriented and sequenced learning programs. Those materials will not be used by teachers unless they are behaviorally modeled, and reinforced through consultants and other personnel in pre-service and in-service programs. The clinical framework of internship can offer enough guarantee that it will be tried and the behavior learned. Supervision by community and college personnel means at least some behavioral control.

The potential of the agencies represented in this component is in supplying emphases and feedback for the School of Education. There are sufficient linkages to insure a constant cycle of information for the design data base. Other Research and Development Centers as well as Regional Laboratory facilities throughout the country could also be utilized in gathering or reacting to certain phases of the design of a teacher education program.

Teacher Education Program Component

Guided by the studies of what schools and teaching are and should be, the design team, selectively assisted by the School of Education faculty, will state teacher education goals in terms of measurable teacher behaviors for different environmental and learning patterns.

The purpose of this proposal is to indicate the potential for modeling at the University of Pittsburgh. An institution adopting a model produced in the Pittsburgh complex will have to consider modifying its School of Education operations to relate more closely in inter-disciplinary fashion to (1) growing domains of knowledge of human behavior, (2) the effect of institutional environments and systems, (3) knowledge of human growth and development, (4) cognitive and emotional aspects of learning, (5) theories and strategies of individualization and small group learning, and (6) the clinical aspects of experience, both pre-service and in-service. Emphasis of a program based on individualization would be in these directions:

1. Concentration on the study and investigation of the Problem of Human Capacity. This area should provide a firm base for all students to relate the problems of the physiological, psychological, and sociological growth of individuals to the development of various human capacities and creativity. In a sense, this would be the basic core for further professional education.

2. Study and Description of the Environmental Systems Which Influence the Growth of the Human Being and With Which the Educational Process Must Concern Itself. This area will be planned and operated

under the assumption that a student exists in a series of environmental systems: his own internal environment, the environment created by the family, the environment created by the school, the environment created by the community, and the larger cultural environment consisting of elements and forces from the national and international arenas. Each of these environmental elements is part of an environmental system. The methods and concepts and principles of environmental investigation, for the students in school systems, would be one of the major purposes of this area.

3. Inquiry into the Cognitive Aspects of Learning. Methods of scholarly and scientific inquiry would be the first part of the concern of this area. The purpose should be to help the students understand how scholars and scientists think about the realities in which their particular fields are dealing. In addition, this area would be concerned with studying the structure of knowledge in the various disciplines with which the schools are concerned. A sequence of concepts and principles for mastering the areas concerned could emerge from these structural studies. Chemistry, physics, and English professors, as example, would work with behavioral scientists in the translation of the discipline structures and systems into educational curriculum ideas and materials.

An essential part of teacher education for individualization is that teachers learn to vary instructional approaches depending on the learning goals involved. Thus, programmed instruction is well suited for the learning of competencies in planning and conducting inquiries requires a project approach in which the student designs his own program for meeting the requirements of his inquiry.

4. Constructing a Clinical Perception and Procedure in Education. The exploration of human capacity, the understanding of the effects on the human environmental systems, and the inquiries into cognitive and emotional development are the three basic behavioral areas which must be field tested. In clinical settings, various approaches to the problems of learning and human development would be explored, and numerous behaviors learned. Issues in learning theory and research would be formulated to explain the impact of environmental systems on the decision-making processes of teachers. This area thus provides a clinical integration and procedure for the student as he looks at the problem of educational decision-making. It will be concerned with the steps in learning the behaviors of teaching, ranging from the strictly vocational aspects of teaching to the full professional dimension of relating teaching decisions to theory and research. The theory and research is cycled through the University and its research agencies.

5. Inquiry into the Nature and Operation of Educational Organizations. Attention will be given to helping the student become familiar with, and understand the operations of, the various aspects of educational organizations at the local, state, and national levels. Its chief purpose would be to create understandings, skills, and motivations for changing the approaches to the problems with which education is faced, consistently, and intensively, and the structure that have been created to deal with these problems.

The Clinical Operation

The pre-clinical program, the pre-internship experience, and the internship could require the student to be involved in the program for four full calendar years. This is a factor that will emerge from design team deliberations.

The design team might consider new courses in the Theory of Individualization, Self and Societal Renewal, or Learning Contained Behaviors (in micro-teaching, or decision simulating, as example), if the components of this program are followed, besides courses indicated by the program's five areas of emphasis.

Data developed from clinical experiences could provide bases for dealing with classroom operation and decision-making processes, especially in urban education environments, all serving as potential hypothesis that could be recycled within the university, research agencies and the clinical network.

The intern experience would be designed to reinforce a student's pre-clinical studies, at the same time to give the student experience in the continued systematic study and development of teaching behavior required in urban education environment.

The University years must be years of professional and personal development as the University students study their own environments and yet study curriculum and teaching behaviors that are beginning to be more and more prescriptive. As example, the curriculum developed in the Primary Education Project (PEP), of the University of Pittsburgh Learning Research and Development Center, states the objective of each lesson; the previous learnings; the materials necessary, and the expected teacher and child behaviors, and concludes with correction procedures. Such micronistic information will soon "pile up," and independent or self study learning procedures must be developed.

The pre-intern could also participate in a workshop examining his own value systems and belief systems, to understand the personal dimensions of teaching. The year's internship in the Pittsburgh system or another urban system would follow this personal assessment. Collection and storage of data about the candidate's growth before and during internship could be assisted by computer support. Evaluation of teacher candidate growth must be done in terms of performance criteria related to the competencies emerging from the education specifications and program emphasis.

CHAPTER 9: SPECIFICATIONS FOR A MODEL OF ELEMENTARY SCHOOL TEACHER EDUCATION

Syracuse University

Summary: Intends to develop the educational specifications for a largely independent progress, undergraduate and inservice teacher education program with these characteristics:

1. A synthesis of current research and development activities in the field of training.

2. An integrated network of training modules.

3. A system wherein the trainee proceeds through the training network largely at his own pace on the basis of criterion measures.

4. A design to produce teachers who have professional knowledge and skill, adaptability, and human relations skills to enable them to respond appropriately to the educational and social reforms that will characterize their future.

5. A research oriented, systems analysis feedback capability that will allow for trainee monitoring, periodic program modification, and the development of generalizable principles of teacher training.

The model program would be designed to allow trainees to progress through a training network of instructional modules largely at their own rate. Emphasis in the early stages of the program would be on professional sensitivity training. The purpose would be to (a) increase self understanding as an incipient professional, (b) heighten awareness of relevant cues in professional interpersonal situations, and (c) facilitate effective responding in professional interpersonal group and organizational settings. In the second year of professional training, a flexible repertoire of teaching behaviors would be shaped by means of a sequence of instructional modules comprised of a variety of simulated and live teaching situations. In this phase, trainees would develop a rationale for teaching behaviors largely through a series of seminars and independent reading programs designed to integrate knowledge, principles and concepts. In the final year of the model program the trainee would test a variety of curricular and instructional hypotheses in a year of responsible partnership teaching and depth study at a school system based resident center. At the resident center the trainee would work with another trainee on a partnership basis in self contained classrooms and team teaching situations with trainees having other specialities.

A research oriented systems analysis approach to trainee assessment and program evaluation and modification are involved in this model program. Data gathered on trainees at a number of points prior to and through out training would make possible (a) truly individualized monitoring of individual trainee progress, (b) modification of nonfunctional instructional modules, (c) multiple regression and multiple discriminate analysis leading to potential generalizations regarding the effectiveness of various modules of the training program for trainees with different characteristics and response repertoires. Post placement follow-up studies of trainees would provide a means of testing hypotheses regarding the multiple relationships between trainee characteristics, performance in training and various teaching "effectivenesses" (teaching effectiveness is a multi-variable phenomenon).

Recent Instructional Innovations

Recent instructional innovations, most of which have become optional since 1960, are now developed to the point that they can be adap
to the building of total teacher education programs. These innovations have been demonstrated to be relatively effective when employed independently and can now be tested in interaction with each other in an integrated program. Such innovations include micro-teaching as developed by Allen, a variety of adaptations of programmed instruction built on the early work of Skinner and others, computer based instruction developing from the early work of Coulson and Bushnell, materials for training teachers to become more aware of their teaching behavior as exemplified by the work of Amidon and Hunter, and a variety of simulation techniques of which the work of Cruickshank, Kersh and Hough are illustrative.

Concurrently with the development of these new instructional innovations has been the development of new instruments for measuring the behavior of both teachers and students in instructional situations.

Some examples of such instruments are: (a) The Observations Schedule and Record, developed by Medley and Mitzel, (b) Interaction Analysis, as developed by Flanders for measuring classroom social-emotional climate, (c) the Observational System for Instructional Analysis, developed by Hough, that makes possible the description and taxonomic analysis of instructional and managerial strategies employed by teachers, (d) a technique for analyzing the oral communication of teachers developed by Joyce and Harootunian, a systematic technique for analyzing the instructional behavior of teachers.

New Conceptual Models

Recent work in conceptual "model building" is perhaps best exemplified by the AACTE publication by LaGrone and the subsequent work of Verduin. Another similar effort in conceptual "model building" is reported by Corrigan.

The new developments in teacher education constitute a rich reservoir of ideas and technological innovations. Full utilization of the new information and technology has not occurred. Partial utilization has taken place in the piecemeal or "tinkering" fashion which has been so common in attempts to modify teacher education. There are very few contemporary examples of coordinated program building which integrate new ideas and technological developments. Where such integration has been attempted, the emphasis has been on development and demonstration with few or no attempts to generalize beyond the specific program.

Teacher Training Program Goals

There are four goals to this program; one is a process goal the other three product goals.

1. Process goal-the program is designed as one which can be appropriately modified by and during its own execution. Feedback mechanisms are to be designed so that at many points, evaluation of the program will occur (as well as of trainees), and results will be used to modify the program.

2. An exportable program model.

3. Increased knowledge about the preparation of teachers.

4. Competent elementary teachers.

Characteristics of the Effective Elementary School Teacher

The competent teacher:

1. has a working knowledge of the subject matter as well as an understanding of the student to whom the material is to be taught.

2. is aware of and sensitive to the relevant process and product cues in the teaching situation which enables him to make independent and rational decisions on the basis of relevant evidence.

3. posses a highly developed repertoire of professional skills and knowledge which enables him to be both a competent generalist in elementary teaching and a competent specialist in one curricular, instructional, or developmental field.

4. utilizes group process skills and the related knowledge necessary for working with other elementary education professionals and para-professionals.

5. utilizes the knowledge and skill in the technology of education that enables him to apply principles of teaching in a manner which is efficient and effective and is at the same time consistent with societal goals.

6. utilizes the knowledge of the principles of teaching (predictable principles of behavior modification).

7. is sensitive to human experience, both his own and others, and is effective in designing strategies and procedures for optimizing the human potential of others, both colleagues and students.

8. is aware of the impact of schooling on the lives of those whom he teaches, and makes decisions which reflect this awareness.

9. is aware of the impact of social and cultural factors which influence himself, the student and the school, and makes decisions which reflect this awareness and makes the school and himself an instrument for truly equalizing educational opportunity.

Assumptions About the Nature of Education, Teachers and Teaching

1. The teacher plays a central role in instruction (with or without technology). Specifications of teacher role different environmental conditions. Teachers need to be able to respond to change.

Figure One

Basic Model of Five Year Elementary Teacher Training Program

	Freshman	Sophomore	Junior	Senior	SU	Residence	SU
First Semester	15 semester hours of liberal arts general ed.	15 semester hours of liberal arts general ed.	9 semester hours of liberal arts general ed. Equivalent of 6 semester hours of pre-professional education.	Equivalent of 30 semester hours of university based professional study	9 semester hours of training in specialization	Full school year of residency in resident center with half time partnership teaching responsibility and half time study involving for the equivalent of 13 semester hours of graduate credit.-	9 semester hours of training in specialization.
Second Semester	15 semester hours of liberal arts general ed.	15 semester hours of liberal arts general ed.	Equivalent of 6 semester hours of pre-professional education. 9 semester hours of liberal arts general ed.				

Program would be composed of:

78 semester hours of undergraduate liberal arts study plus up to 18 additional semester hours if graduate specialty is in liberal arts area (minimum of 78 ⟶ maximum of 96 semester hours in liberal arts education)

The equivalent of 42 semester hours of undergraduate pre-professional and professional study plus minimum of the equivalent of 13 semester hours in graduate field resident professional work if specialty is in a liberal arts area and up to the equivalent of 31 semester hours if specialty is in a professional area (minimum of the equivalent of 55 semester hours of professional study ⟶ maximum of the equivalent of 72 semester hours of professional study).

2. Teachers need to be aware of the social and professional forces affecting education.

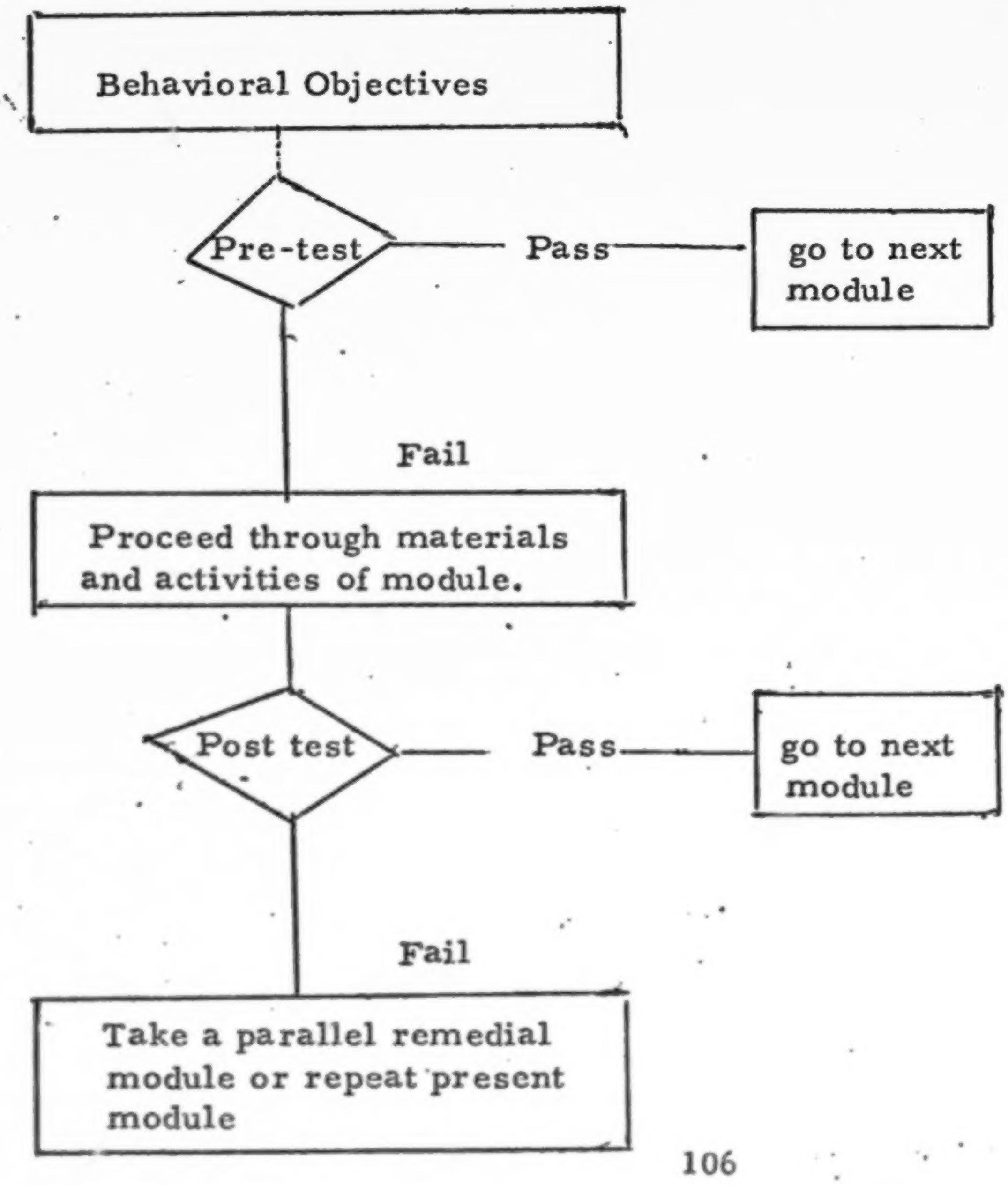
3. To make professional decisions and implement them effectively teachers need to know many things, organize and internalize them until they are operational. The model proposed contains seven components which provide the framework for designing the learning experiences.

Assumptions About People and How They Learn

1. Every person is unique. Learning styles and rates differ; the strategy provides alternative routes to learning and differential pacing.

2. Planned learning requires instruction based on diagnosis and perscription.

3. People teach as they were taught, or as they were taught to teach.


Behavioral Objectives
Pre-test
Pass
go to next module
Fail
Proceed through materials and activities of module.
Post test
Pass
go to next module
Fail
Take a parallel remedial module or repeat present module

Basic Program Components

The seven components are:

1. The liberal arts general education component.
2. The professionally oriented sensitivity training component.
3. The elementary curriculum, methods and measurement component.
4. The child development component.
5. The general instructional theory and practice component.
6. The general cultural and social foundations component.
7. The specialization component.

Assumptions About Structure and Transmission of Knowledge

1. Each individual develops his own structure of knowledge. Similar structures facilitate communication.

2. A model is a way of making generalizable knowledge concrete by showing relationships and implying applications.

3. Propose to create a model that prepares teachers for change and gives them the tools needed for change. The model can not be one of initiating existing teachers and teaching practices.

The Model Program Structure and Rationale

Figure One shows the basic model of the five-year training program. One of the essential characteristics of the proposed program is that it would be mainly continuous progress program comprised of a network of instructional modules. Though these might need to be translated into the academic currency of credit hours in many institutions, they would have little relationship to conventional courses as they currently exist at most colleges and universities.

Each instructional module would be a set of experiences for which there would be behaviorally stated objectives, and pre- and post-tests (usually performance measures) Students would proceed from one module to the next at their own rate on the basis of: (a) their pre-test performance, and (b) other post-test performance.

Except for components 1 and 7, the training would be done by modules. Components 2 through 6 would each be composed of a series of instructional modules that would form a three-year training network. One of the essential features of the proposed program is that it would be composed of an integrated set of instructional experiences within the basic components structure. Integration would be achieved by means of seminars which discussed concepts from various components relative to educational problems, and by intentionally building modules that forced integration.

The Liberal Arts Component

The liberal arts component is designed to provide teachers with an understanding of our current society, culture, and heritage. In the first two years of study and part of the third year, the trainee would pursue a basic liberal education and a specialty. The basic program is composed of six fields of study: English and fine arts; philosophy and religion; foreign languages, national sciences; mathematics; social sciences including psychology.

The initial planning group that drafted this proposal felt that its time could best be used in defining the rationale for the preprofessional and professional aspects of the program, instead of dealing with an area over which it had no immediate influence. A task group will develop a position paper on the liveral arts in teacher education.

The Professional Sensitivity Component

A professional teacher achieves educational objectives through modification of student behaviors. To do this, the teacher must be sensitive to his own behavior and needs, the students' behavior and needs, and the wide range of alternatives that are available to the teacher and the students. Training in understanding and skills required for these sensitivities will be planned. Also trainees would have the opportunity to explore, in instructional settings, the dynamics of intrapersonal, interpersonal, group and organizational human interactions with the self as the point of reference. When a teacher's understanding of human relations concept is supported with pertinent skills in human interaction, teachers will be better professionals.

This training includes knowledge, skills and experience that helps the trainee to: (a) gain greater awareness and understanding of self (motives, aspirations, values, limitations and assets); gain greater awareness of self and skill in working with others in profession interpersonal groups and organizational settings; develop and test theoretical models of relationships between teachers and students in school; develop the ability to identify and respond appropriately to process and product cues in student behavior; develop flexibility in shifting instructional set so it is compatible with strategy being used.

Some examples of instructional modules the pre-professional year of this component were given. These were designed to: (1) sensitize trainees to overt and subtle cues in the classroom and student behavior and to make appropriate responses; (2) show another person behaviors indicative of empathy, congruence, and unconditional positive regard in their relationship; (3) apply perceiving and responding skills in a real instructional situation; (4) become sensitive to effect of teacher behavior in creating and maintaining a social-emotional classroom climate. Two examples of the senior year modules were designed to (1) provide the trainee with understanding of effect of social institutions (school systems) on people and an awareness of alternatives that people have in responding, (2) develop task oriented group process skills.

The Curriculum, Methods, and Measurement Component

A teacher must know the content and various aspects of the elementary school curriculum. She must be: (1) aware the assumptions underlying and knowledgeable about alternative approaches to the organization and structure of elementary curriculum; (2) proficient in adapting curriculum approaches to specific situations, (3) proficient in translating curriculum content and structure into methodology appropriate for children, (4) able to measure student learning relative to objectives.

The program is designed to confront the content-method issue directly without taking sides. It is assumed that a deep conceptual understanding of content is prerequisite to effective teaching. Also teaching has a rich set of methodological tools. Effective use of method is as essential as conceptual understanding of content (concepts, knowledge, skills, attitudes, values) being taught. The liberal arts component was designed to help the student develop and maintain himself as a humane and well-informed person. It is assumed that any subject matter that must be specific to teachers in training comes under the curriculum in the School of Education. Curriculum and instruction modules will be used.

This component has a minimal input during the preprofessional phase. Its role is to give the trainee sufficient background to support simulated and actual exploratory experiences relative to the sensitivity training component. These introductory experiences would use commercially prepared and largely "teacher proof" curriculum materials in reading, language arts, arithmetic and visual perception.

During the senior professional year the input of this component would be maximized. A large part of the trainees efforts would go toward: development of: (1) skill in the use of various teaching techniques and materials, (2) skill in planning and relating content to objectives, objectives to instruction, and measurement to objectives; (3) understanding of total elementary curriculum--its scope, sequence and forces influencing its development; (4) development of skills necessary to carry on a spectrum of teacher activities--team planning and teaching, learning difficulty diagnosis and remediation, interpretation of test data, test construction and parent conferences. The ultimate goal is competence in responsible autonomous teaching in the classroom. During the year the trainee would be given increased responsibility in an elementary school under the guidance of a trained clinical teacher. During the year the trainee would develop the basic competencies of this component to the point that the resident year would be largely a matter of maintaining, perfecting, and generalizing these skills.

A series of examples of instructional modules conclude discussion of the component.

Pre-Professional Year Modules:

These are designed to: (1) provide the minimal skills and knowledge to participate in a realistic teaching-learning situation with elementary children, by means of an intensive self-instructional program with coordinated seminars, e.g., using the SRA Reading Laboratory in a series of tutorial experiences with elementary school pupils at different levels; (2) develop an operational understanding of child development concepts to curriculum, instruction and measurement decision making through use of filmed episodes designed to illustrate this interface, plus coordinated readings and seminars.

Senior Professional Year Modules:

Examples include those designed to (1) develop the conceptual and skill-learnings necessary for using the Science-A Process Approach in science teaching; (A program of coordinated readings, seminars, and peer-teaching episodes will be used); (2) learn to state instructional objectives, (through programmed instruction); (3) develop trainee's diagnostic and remedial skills (trainee will be assigned a pupil having difficulty in learning). Trainee would diagnose the source of the difficulty, plan a series of learnings, work intensively with the pupil, develop and administer a test over the unit, that demonstrated the pupil had learned the concept.

Resident Professional Year:

Besides on-the-job work trainees would be involved in a series of curriculum methods and measurement seminars; and in a curriculum planning project for the school system. The activity is designed to have the trainee perform as a productive contributing member of the school.

The Child Development Component:

Designed to provide "organizing concepts." Since no single account seems to be most accurate and useful, trainee would learn of several theories. Study of normative data on child growth and selected theoretical positions. More explicitly trainee should: (1) become familiar with selected theories of human development and learning--Erickson, Sears, Piaget, Maslow, Skinner, Combs; (2) use theories to analyze observed child behaviors and generate hypotheses to explain them; (3) recognize developmental stages and consider implications for practice; (4) understand the range of abilities and characteristics within a grade level; (5) develop skills of analysis of research studies; (6) develop skills of recording and communicating observations.

A series of examples of instruction modules is given.

The General Instruction Theory and Practice Component:

Teachers should: (1) have a theoretical rationale for using instructional and managerial strategies; (2) have a variety of experiences in using the strategies under simulated and actual conditions; (3) receive continuous feedback on their performance.

Six basic elements are given as the program for understanding and using a wide variety of instructional and managerial strategies. These are designed to help trainee to: (1) control his own behavior in order to influence behavior of others--e.g., specific training in self-monitoring; (2) understand and operationalize several conceptual models of instruction and management; (3) practice using simulated and real conditions of instruction; (4) learn to use at least one system of techniques for analyzing instructional and managerial behaviors; (5) learn to use relevant data about students, types of objectives, and knowledge of own capabilities to make decisions about instructional strategies; (6) learn to evaluate extent that managerial and instructional intention were carried out as planned. Some examples of instructional modules are indicated under the headings: purpose, instructional experience, example of behavioral outcomes for the preprofessional, senior professional, and residence year modules. An example from the senior year module is to develop trainee's repertorie of conceptual models of teaching to be tested in simulated and live teaching episodes. The trainee will engage in a series of readings and coordinated seminars that discuss and critique a series of conceptual teaching models--Gallagher and Aschner, Joyce and Harootunian, Taba, Bellak, Hough and Duncan, ... Trainee should be able to describe clearly in writing, three of the five conceptual models; he should construct a set of models cognate with the set studied. He should prepare a written proposal for testing the model during residency.

The Social Cultural Foundations Component

A practicing teacher is likely to be evaluated on technical skills and ability to manage a classroom. Once competence is so defined, what the teacher has learned in cultural and social foundations seems to have little relationship to professional competence. Inclusion of this component is based on two assumptions: (1) professional competence of elementary teachers is broadly deprived to include understanding of social and cultural factors which affect schools and schooling; (2) some of the skills used by philosophers and social scientists can be learned by teachers and are valuable to teacher's technical skills. The argument is that the teacher as a professional includes many things that go beyond narrow technical proficiency.

The goals of the component are to provide experiences that enable the trainee to: (1) understand the social dynamics of educational groups and institutions; (2) understand the social, political and economic forces that affect schools and schooling; (3) develop skills in analysis of social situations; (4) develop skill in analysis of language as a tool for communication and influencing behavior of others. Several examples of instructional modules are given.

The Specialization Component:

This component and the liberal arts components are the two in which the trainee would take conventional university courses rather than use self-paced instructional modules. The speciality concept implies a series of tailor-made programs for small groups of students and it does not appear economically feasible to develop modules.

Three kinds of specialization appear to be most functional in terms of current and projected future team efforts: (1) curriculum specialization in subject fields (language, social studies, science); (2) instructional communications, data processing and information retrieval, urban teaching, and the affective specialist (a person having special training in working with small groups of students to help them explore values, motivations, self-concepts, concepts of others); (3) child development specializations. One specialty from each of the three areas is discussed in greater detail.

Summary of the Five Year Program

Figure 1 illustrates the five-year plan.

The residence year would involve half-time responsibility within the school system in (a) teaching in elementary school classrooms as a generalist, (b) applying specialities in team teaching situations, or (c) applying specialities in curriculum or evaluations, planning and development teams.

In order to facilitate flexible use of the trainee's talents, the trainees would be placed in partnership pairs in the residence centers along with residence administrators and residence supervisors. These resident supervisors and administrators might, for example, be Ph. D. or CAS students at the University working on administrative or supervisory certificates. For example ten pairs of teachers might be assigned to a residence center with each of the twenty teachers having a unique speciality thus allowing for a variety of possible arrangements of self-contained teaching and team teaching within the center. During their residence at the center, trainees would be expected to spend some considerable time (perhaps three to four weeks) in classrooms within the school system that were not a part of the residence center, or perhaps spend an equal amount of time in the school system in which the trainee was expected to be hired the following year. In either case, a teacher that the trainee replaced would take the trainee's place in the residence center. This would provide for a unique type of inservice training for teachers already in service. The purpose of such exchange teaching would be to bring the trainee into contact with a different type of responsibility in order to test their ability to transfer sensitivity and professional skills to other reality based situations. This would test the trainees ability to transfer skill and understanding to situations outside of the basic training design.

Throughout the two years of pre-professional and senior professional studies, the trainee would work on extended assignment of developing a proposal for the resident year which would be an explication of self-understanding set in a context of professional theory and practice congruent with each trainees individual, unique potentials as a teacher. This proposal for the resident year would be developed for presentation at the conclusion of the senior year and would be tested in hypotheses in the residence center.

CHAPTER 10: SPECIFICATIONS FOR A MODEL OF TEACHER EDUCATION AND THE MECHANISMS FOR BRINGING IT INTO EXISTENCE

Teachers College, Columbia

This proposal consists of four parts: (1) a statement of considerations and assumptions to which a model of teacher education needs to be related, (2) a model of teacher education, (3) a procedure for refining and developing the educational specifications of the model, (4) creating mechanisms which can be used to implement it.

The development of new patterns of teacher education is made complex by three factors: (1) it requires the definition of professional teacher education and development of programs to create effective teachers; (2) teacher education is imbedded in an exceedingly diffuse and changing educational scene. It bears an uneasy relationship to teaching because it stands for change; yet its graduates must be able to perform within existing school institutions and to help define the practical, as well as new, roles for teachers; (3) professional teacher education is wedded to and is part of the general university education of the student. In the past "general" and "professional" education have often warred with each other.

The essential task in creation of a model of teacher education is the development of a rationale that generates solutions to several problems: (1) to permit development of objectives for teacher education and provide the means for achieving them; (2) to relate teacher education to the existing and emerging structures of the school; (3) to relate teacher education to "general" or "liberal" education.

The beginning of the proposal was devoted to the rationalizations for the model, and the presentation of the model was largely in terms of the development of the form and substance of each component of the program.

I. Considerations for a Rationale

Change:

Teacher education must be rooted in a commitment to educational change. A teacher education program needs to be entwined with schools and clinics where educational inquiry is the norm and where the teacher receives training and support after his pre-service education is completed.

Uncertainty:

The new teacher enters an area where we are uncertain about the ends and means of education. The young teacher is entering a world where new alternatives for curriculum on instruction are being created and tested at a rapid rate. He may wish to be taught the "right" or even the "best" methods for achieving any purpose, but these certainities do not exist. New ways of doing things are constantly being created and, to be effective, the new teacher must be able to know how to select and incorporate desirable aspects into school life. The new teacher must be prepared to help create new goals and assemble the means to carry them out. He needs to be trained for new educational roles. It is necessary to develop a program that takes advantage of the virtues of existing schools, but which avoids the over stablizing effects of student teaching and internship of present practice.

Scholarship:

A teacher must be a competent scholar of teaching and learning. He must be prepared to create and test original solutions to educational problems, curriculum materials prepared by himself or others, a school that is the center of inquiry.

As roles in education become more differentiated, it will become more possible to prepare teachers for scholarship. A specialist in computer simulation is a far more manageable role than is themulti-purpose nursery school teacher of today, whose role is too diffuse to permit mastery in performance, or scholarship.

Training Modes:

New training methods for achieving performance objectives include: micro-teaching, integrated feedback systems, simulation techniques for decision-making training, development of components to achieve greater interpersonal flexibility in teaching and programs to increase the "interpersonal strength of the teacher (his ability to develop structure in difficult interpersonal situations.)

A data bank where developmental profiles of teaching styles of education students are cumulated permit student and faculty to see a developmental picture and modify training. These permit development of differential training models for teacher of differing styles and personality.

One can't develop performance models for teacher education by simply analyzing the present performances of teachers in the classroom. An adequate performance model will describe operatives who function in an evolving milieu that they help to shape.

Urbanization:

Teaching is not a single process. Some of the processes are scholarly in character (as, analyzing modes of inquiry of scholarly discipline), others require substantial interpersonal capacity (as working with others to change the character of the school) and others are primarily technical (as diagnosing learning difficulties). Some components need the kinds of methods characteristic of training psychology. Others require feedback techniques that help the learner to monitor his own performance. Others require scholarly inquiry and still others may require therapy. The strategies of a sound program will be as multiple as its components.

Implementation:

Specifications of teacher education are useless without mechanisms for bringing them into existance. Staff use in a new program needs careful delineation and extensive training programs. Structural changes in public school program are also needed and mechanisms to insure initial and continuing education of the teacher is natural and vigorous in the school setting.

II. Rationale for Teacher Education

The basic of their rationale stems from the idea that professional performance can be described in terms of control over certain areas of reality.

Creativity and Control Over Reality:

An architectonic analogy is used. To create a model of a professional who will grow in his capacity, create new options for children, and contribute to his profession, is to identify areas of reality he needs to control in order to define and solve educational problems. This is a different conception of professional control from present day training. The first stage creation of a teacher education program requires identification of the areas of reality which the teacher should control if he is to function effectively with children, create new educational forms and bring them into existence while participating in the search for knowledge about teaching. The second stage is development of curricular systems which permit teacher educationa students to achieve control of the essential areas of reality. In the third stage, the components are unified into a coherent program. In the fourth stage, mechanisms for installing the program are specified.

Five Areas of Reality:

Making and Using Knowledge: The teacher must control "knowledge" --those methods or concepts one uses to organize life's experiences-- and he must know how to instill this operation knowledge in students. Knowledge is not simply data or information; it is the way one goes about seeking data and drawing generalizations. The teacher must therefore know a lot about truth and fallacy, about evidence and bias, about the nature or theory of knowing. He needs to know what scholarly inquiry is, how knowledge is produced, held, used and made obsolete.

Shaping the School: Every teacher must develop strategies whereby he can identify critical educational problems and, along with his colleagues, make decisions toward solving them. He has to make decisions about educational objectives and about the methods and procedures most likely to achieve those objectives. He has to organize curricula around coherent themes so that the growth of the students' knowledge from year to year is cumulative rather than dispersive or sporadic. These curricula deal with content or subject matter, with ideas, methods, and values to be taught, with instructional resources, with the organization of students into classes or groups, with testing and evaluation, and with every other general educational influence on students. Every teacher must learn how to cooperate with his colleagues to make comprehensive decisions affecting these several interacting problems.

Teaching with Strategy: For carrying out the various curricular decisions, the teacher must learn how to employ a wide range of teaching strategies. He must find appropriate methods and materials, and then reward the behaviors he wants to ençourage in students and inhibit those he wishes to discourage. When appropriate, he needs to teach didactically. When appropriate, he needs to lead students, individually or collectively, to plan largely on their own. Most important, the teacher must exercise self-control with students so that his personal feelings or needs do not interfere with his efforts to carry out professional decisions.

Creating Interpersonal Climates: The teacher must learn how to work with groups of people--students and colleagues, both children and adults. He must recognize his effect on groups and their effect on him. As a member of a team of teachers, he must know both how to lead and how to cooperate. He has to cope with the formidable social realities of the communities and schools within the city. With children he must further know how to stimulate their own ability to lead and cooperate in groups in a shared search for knowledge. All this calls for an ability to experiment with varieties of organization, to compromise with fellow teachers on plans and procedures, and to diagnose the needs and the interests of children who must be organized.

Radiating a Creative Personality: The teacher must learn to cope with himself. He must handle information and theories flexibly and accurately, with minimal personal bias and with resolve and understanding. He must be able to control himself when children challenge established authority and standards, and he must help them develop their own standards. He must provide a mountain of support for the frightened and insecure child, however unlovely he may be. He must learn to radiate the interpersonal climate appropriate to the task at hand and to the children being taught. He must become able to assess his own behavior objectively and then work deliberately to improve it; he cannot afford to be defensive about his current personality or practices.

All of these, it should be emphasized, are processes. Teaching is a fluid interplay of events. One cannot just "know the subject and teach it," because the subjects themselves are ever changing. The physics of 1966 is not the physics of 1956.

In 1950 the teacher was still thought of as a lone operator. Now he is more often considered a skilled member of an instructional team. The teacher of a generation ago could develop one lecturing style to serve many purposes. Today he must command a repertoire of teaching strategies that he can all into play to meet the changing demands of various teaching situations.

III. A Model for Teacher Education

The model proposed consists of seven components built about five specified processes. Five of the components (basic) are designed to bring the teacher to the level of professional functioning in the school, and each is constructed around one of the five processes of teaching. The other two (continuing) components flow from the first five and are developed to help the teacher maintain and extend his control over the five processes. One component (knowledge and knowing) begins in the undergraduate years and is closely related to the general education program.

Temporal Relstionship of the Components

Undergraduate Years	Fifth Year	Internship years	Career years
Controlling knowledge	Five basic components	Five basic components	Continuing components

Figure 1

The Five Basic Components

Each component is constructed to achieve control over one of the five aspects of reality essential to professional functioning. Each component is described in terms of general behavioral objectives and then in terms of the rationale for achieving those objectives. Illustrations are given of specific behavioral objectives which can focus aspects of each component and represent the behavioral objectives that will be specified. Specific samples of means to be used are given, and samples of evaluation progedures are described.

Controlling Knowledge - The First Component:

The broad objectives of this component are: (a) an acquaintance with the significant events in the history of knowledge, (b) a knowledge of systems for analyzing communication and interpersonal relations, (c) a knowledge of the psychology of growth, learning and socialization.

The Means for Controlling Knowledge:

1. The spirit with which the general education of students is conducted. All of the courses which are designed to introduce the students to the disciplines can be conducted in such a way that there is a concentration on the basic nature of the field. Then, as a student studies certain areas in depth, creating "majors," or the equivalent, the emphasis

on organizing concepts in the modes of inquiry can continue.

2. Through the academic study of metaphysics, epistemology and logic. A student needs to explore the major philosophical conceptions of what reality is and how man comes by his understandings of it. Throughout his undergraduate and graduate study, a student needs to engage in cooperative inquiry with his peers aout the important metaphysical and epistemological issues. Another means involves practice in the analysis of subject matter for the critical questions around which learners may be guided. The student needs to study the products of the academic reform movement. He needs to discuss with scholars ways of treating the organizing concepts of the disciplines. He needs to analyze teaching strategies which are built around the organizing concepts and modes of inquiry of the disciplines. He also needs to construct experiments in which he tests out various approaches to knowledge with his peers and with experienced personnel. He needs to explore how children react to various ways of guiding their inquiry so that they too begin to explore the metaphysical and epistemological questions of our time.

In other words, the means of this component can be characterized in three categories. First, the academic studies of the major branches of knowledge, with a strong emphasis on the nature of knowledge and its creation. In the second case, the academic study of the empirical methods for studying the school and learning and an exploration of the major theories from sociology and psychology that bear on the school. In the third case, engagement in empirical study of the school, of the classroom and of the learner.

The Relationship of this Component to the General Education Program

There should be no conflict between this component and the chief goals of general education. This component should help to stiffen the general education of many colleges. The major difficulty is probably the training of personnel. Outside of the large universities, many college faculty members are themselves removed from the metaphysical and epistemological questions that are at the heart of academic inquiry and it is very difficult for institutions which are not staffed with producing scholars to create an environment in which the central issues and ways of thinking of the discipline are close to the surface of the study of the students. In other words, it will take a long time to achieve the implementation of the component because it involves the academic upgrading of most institutions. In the case of the weaker colleges, the implementation can probably only be achieved by inter-institutional cooperation at several levels. At one level, the institution can cooperate in the development of multi-media courses to be used in several institutions and which are designed to revise the content and spirit of instruction in the academic areas.

The Evaluation of the Component

The primary setting for the evaluation of the component can be achieved through decision making tasks which are carried out in a simulated school setting. One of these sets to the students a problem which is illustrative with regard to the point at hand. Students are required to make diagnosis of specific learners on whom large amounts of information have been gathered. Then, they create curricula in various academic areas which reconcile the needs of those learners with the modes of inquiry of that discipline. In carrying out this type of task, the students produce behavior which gives the faculty an opportunity to observe whether the students are acquainted with the analytic tools of the disciplines, whether they are acquainted with the products of the academic reform movement, and whether they can create original curricular and instructional systems. Periodically throughout the undergraduate and graduate years, students can be confronted with problems in such simulated settings. They also can engage in the study of real students and schools.

Shaping the School - The Second Component

The intellectual heart of professional education is the development of strategies which can be used for creating educational environments for children. The specific objectives of this component can be derived from the following broad ones: (a) an acquaintance with the major strategies for creating curricular and instructional systems, (b) a student should develop competence in the building of instructional systems of different kinds, (c) the student should understand the sociology of the school and the processes of bringing about institutional change.

The Means of the Component:

Knowledge in these areas is exploratory and experimental. As the student learns about the methods for building curricular systems, he needs to be exposed to alternative ways of thinking about the problem. The spirit of the component has to be experimental and hypothetical, because that is the state of the art.

The component can proceed in three stages. In the first stage, the case method introduces students to strategies used to make educational decisions. These can include case studies of the development of the academic reform movement, of the creation of local school programs, of the shaping of school plant design, of the building of media systems, and the development of experimental schools such as Summerhill, Seven Oaks and others. The cases should be handled so that the students extract from them the premises which guided curriculum construction and begin to formulate the alternative strategies which have been used.

In the second stage, the student should be confronted with problems of analyzing existing school situations and making broad curriculum decisions within a simulated school. Analysis and decision making should be clearly related to one another so that the work within a simulated school becomes related always to the shaping of an existing school.

In the third stage, the students should have experience in the creating curricular systems, working with more experienced professionals in internship relationships. They should work also as subordinates in the curriculum and instructional clinics, which serve the schools of the area. They need to study the tactics which are used by clinic personnel to induce change in the schools and to make and carry out curricular decisions.

The Training of Personnel

The training of personnel is exceedingly difficult. A major opportunity exists in training faculty how to use and how to build simulated school environments. Also, a systematic approach can be made to training the faculty to use the case method and how to operate simulators. Teaching faculty members how to handle inquiring groups of students who are creating curriculum systems will probably require a demonstration center which includes internship for college faculty members.

The Evaluation of the Component

The simulated school provides the basic setting for the collection of data, for it is possible for students' realistic problems on a regular basis and for their performance to be rather closely observed, In the internship period, systematic analyses of decision making can be made and a developmental record of each student's performance can be maintained.

Teaching with Strategy - The Third Component

Making and carrying out instructional decisions that are tailored to specific learners is the area of consideration here. Examples of objectives are: (a) the ability to carry out a large basic repertory of teaching behaviors. The teacher needs to be able to select teaching strategies and to manifest behaviors that bring them into existence. He needs to command a wide variety of teaching tactics. (b) The student needs to be able to analyze teaching systematically and to monitor his progress towards expanding and deepening his repertory. He needs to know category systems for analyzing teaching, and to be able to use them as described above. He needs a knowledge of models of teaching and of how to build lessons around these models. He needs to know how to work with other groups of teachers in feedback teams who strive to analyze this behavior and set goals for improving teaching. (c) The student needs to learn how to diagnose a specific learning need, and to apply the strategies which are used to shape the school to create specific instructional systems for particular learners, selecting objectives, means and evaluating procedures. (d) Basic to the above is the knowledge of wide ranges of teaching strategies and how they are carried out.

The Means for Controlling Teaching Strategies

A basic means is the integrated feedback system. This student is taught to use systems for analyzing teaching behavior, and to analyze episodes of teaching: filmed, taped and live. Gradually he learns to apply these to systems to analyze his own teaching and set goals for improving it. Throughout the basic period and into the period of continuing education, he is a member of a "feedback group" or a group of fellow students and teachers who analyze and monitor one another's teaching.

The second means is the employment of a teaching laboratory. The teacher can see demonstrations of films of the teaching strategy and through "micro-teaching," he can practice various teaching strategies, including ones he creates for himself.

A third means is the sensitivity training program which provides a system for training teachers to read the behavior of the learners and to modulate their teaching behavior to take into account the frame of reference that the learner brings to the situation. This system requires a teaching laboratory and sets of teaching situations in which role players simulate the behavior of learners.

Fourth, the interpersonality strength training system provides a system for training teachers to come to grips with difficult learners, whose frame of reference is that the teaching-learning situation is essentially a tug-of-war. Using role players and micro-teaching situations, this training program provides a young teacher with a framework for analyzing the social system of his classroom and for developing a more stable social system.

Training Personnel

Requires development of extensive instructional systems for college and school personnel alike. Plans for developing teaching laboratories also have to be made, as well as invention of devices for making them function effectively in school settings.

Evaluation:

Evaluation can be carried out through maintenance of a data bank using analyses of teaching episodes under simulated and natural conditions. Assessment tasks such as those developed by Hunt and Weinstein permit behavioral measure of interpersonal strength and sensitivity as well as flexibility in styles. Assessment in micro-teaching situations permits an evaluation of the student's ability to produce a teaching maneuver or to develop a lesson in an instructional model.

Creating Interpersonal Climates - The Fourth Component

The broad objectives are: (a) to understand the major modes by which the behavioral scientist analyzes the school as a social system and the processes by which human behavior is shaped as a result of socialization by the school and other social institutions. (b) Acquaintance with the major ways that people have attempted to develop social systems and to use them for educational purposes. This includes an acquaintance with the social psychology of the school, the experimental studies of group climate and of the effect of group interaction patterns on individual behavior. The student would also need acquaintance with the studies of the urban milieu and of the institutions within it as they affect children. (c) Skill in studying the social system of the classroom. Includes acquaintance with systems for making behavioral and role analyses of situations in which people interact. (d) Skill in developing and carrying out strategies to build social systems in classrooms and schools.

The Means

Academic methods need to be employed to acquaint students with the major devices for analyzing social systems, the integrated feedback systems, the sensitivity training, teaching tactics training, and interpersonal strength training which were described in the previous component, can also be used to teach students to analyze the social system of the school and the classroom, and to build a basic repertory of maneuvers by which they can create social systems in school environments, the new teachers need to conduct ongoing studies of the social system of their schools and consciously make decisions to create favorable social situations. During the internship years, they will need to participate in the creation of new forms of school-community relationships and the development of school social systems.

Personnel Training

In-service of the college faculty and means for implementing this component are described under the third component.

Evaluation

Evaluation will be in terms of performance in the simulated school settings and developmental studies of teaching behavior with the emphasis now on the social system.

Controlling the Self - The Fifth Component

The objectives are: (a) knowledge of strategies for inquiring into one's self and the causes of one's own behavior, (b) a willingness to apply those strategies to the examination of oneself as a teacher interacting with students.

Means

The primary strategy of this component is one which has been developed by Wright at the University of Chicago in the Elementary Teacher Education program there. This is a psychology course where the teacher learns frameworks for analyzing his behavior and the things that tend to cause him to do the things he does when he interacts with children. The primary subject matter is provided by the students themselves, as they write anecdotes describing their own behavior. The strategies of analysis of these are drawn from psychology, with the student learning various ways that the behavior in his ancedotes can be accounted for.

Personnel

Implementation of this component is an unknown quantity and has to be experimented with. Probably will require a demonstration center and the opportunity for college faculty members to work as apprentices with "experts" in administering the program.

Evaluation

Evaluation will probably be indirect, and analogous to the design used by Travers in studies of measured needs of teachers and their behavior. Also, developmental studies of teaching styles can be examined to determine whether students achieve increasing control of their behavior in a teaching situation.

The Continuing Phase of Teacher Education

The in-service phase of education is planned separately and is designed not only for graduates of the pre-service program but for all teachers in the schools that cooperate with the education program of the region.

In-Service Education - The Professional Component

This component is designed to achieve continuing control over knowledge, strategies for shaping the school, and to encourage the teacher to continue to engage in solid research of his own.

Means

The setting is a continuing seminar throughout the school year and summer. Montgomery County Schools attempt to employ over one-third of its teachers during the summer months to engage in study is a possible means. Many school systems are finding time as a part of the teacher's assignment for participation in seminars like these. Each teacher needs to be a part of a continuing group of teachers who study and analyze teaching and who devise and carry out teaching tactics and analyze the results. The extensions of the third and fourth component, in other words, need to be institutionalized so that as the teacher enters classrooms he does so not alone, but as part of a community which is well aware of its ignorance concerning education and which is devoted to the study of education.

Relationships Among the Components

Controlling knowledge and developing self control and creativity are essential to professional performance, but they are not professional performance itself. Making and carrying out curricular and instructional decisions and creating social systems are the fundamental professional processes. The continuing components are designed to root teacher education firmly in the school--to ensure that planned change is a fundamental concern of the community of teachers and that the new teacher enters a professional society in which the study of education is as normative as the act of teaching.